RC756

JAMAICA

ANNUAL REPORT

OF THE

MEDICAL DEPARTMENT.

FOR THE

YEAR ENDED 31ST DECEMBER, 1934.

Ordered by His Excellency the Governor to be Printed.

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MEDICAL DEPARTMENT.

Report for the year ended 31st December, 1934.

(PART I.)

I.—ADMINISTRATION.

(a) New Appointments, Transfers, Etc.

New Appointments—

- Dr. I. J. Cruchley, Medical Office of Health, St. Andrew, in addition to his substantive duties as Medical Officer of Health, Kingston.
- Dr. H. M. Johnston, Assistant Medical Officer of Health, Kingston and St. Andrew.
- Dr. J. N. McIntosh, Medical Officer of Health, St. Elizabeth.
- Miss E. S. White, Assistant Matron, Public Hospital, Kingston.
- Dr. R. O. Cooke, 4th Assistant Medical Officer, Lunatic Asylum.
- Dr. L. St. C. Ferguson, Deputy Health and Deputy Visiting Officer for Ports in Portland.
- Dr. H. H. Brown, District Medical Officer, Montego Bay (Acting).
- Dr. V. R. Robb, District Medical Officer, Chapelton (Acting).
- Dr. H. D. Henriques, Supernumerary Medical Officer, Public Hospital, Kingston (Acting).
- Dr. L. L. Freeman, Supernumerary Medical Officer, Public Hospital, Kingston (Acting).
- Mr. H. Miller, Dispenser, Morant Bay.

Transfers—

- Dr. F. H. N. Cruchley, from Medical Officer of Health, Portland, to Medical Officer of Health, Hanover.
- Dr. L. M. Watson, from Medical Officer of Health, Hanover, to Medical Officer of Health, Portland.
- Dr. H. D. Chambers, from Medical Officer, Hookworm Commission to Medical Officer, Yaws Commission.

Dr. S. E. Ferreira, from Supernumerary Medical Officer, Public Hospital, Kingston, to Medical Officer, Yaws Commission (Acting).
Dr. C. E. Riddell, from District Medical Officer, Santa Cruz, to District Medical Officer, Crofts Hill.
Dr. H. E. T. McDonald, from District Medical Officer, Crofts Hill, to District Medical Officer, Santa Cruz.
Dr. S. J. Arthurs, from District Medical Officer, Duncans, to District Medical Officer, new Windward District.
Dr. H. M. Embden, from Acting District Medical Officer, Lower St. Andrew, to District Medical Officer, Duncans.
Dr. J. H. Forde, from District Medical Officer, Falmouth, to District Medical Officer, Lucea.
Dr. A. L. McFarlane, from District Medical Officer, Lucea, to District Medical Officer, Falmouth.
Miss E. D. Manahan as Matron from Annotto Bay to Morant Bay.
Miss S. A. Spencer as Matron from Morant Bay to Annotto Bay.
Miss A. L. Levy as Matron from Hordley to Chapelton.
Miss A. H. Bennett as Matron from Chapelton to Hordley.
Miss L. Bird as Matron from Cave Valley to Falmouth.
Miss L. M. Robotham as Matron from Falmouth to Cave Valley.
Mr. O. G. Miller, from Supernumerary Dispenser, Public Hospital, Kingston, to Dispenser, Sav.-la-Mar.

Resignations—
Dr. H. H. James, 4th Assistant Medical Officer, Lunatic Asylum.
Mr. C. W. Hossack, Dispenser, Morant Bay.
Mr. R. Wade, Dispenser, Chapelton.

Retirements—
Dr. D. L. Tate, District Medical Officer, Montego Bay.

Deaths—
Dr. H. D. B. Castle, Medical Officer of Health, St. Elizabeth.

In addition—
Dr. A. A. Peat, Medical Officer, Yaws Commission, was awarded a Fellowship in Public Health by the Rockefeller Foundation in the U.S.A.

(b) Financial.

Expenditure—

	£	s.	d.
Medical—General Administration—			
Personal Emoluments	41,226	16	6
Other Charges	19,626	0	7
Medical—Hospitals and Lepers' Home—			
Personal Emoluments	37,093	0	2
Other Charges	51,854	12	3
Lunatic Asylum—			
Personal Emoluments	22,739	6	0
Other Charges	18,801	14	5
Total Expenditure	£191,341	9	11
Total Expenditure of Whole Colony	£2,316,227	7	5
Percentage of Expenditure on Medical Department	8.3%		
Revenue from Fees, etc.	£4,304	13	10

II.—PUBLIC HEALTH AND GENERAL REMARKS.

The general health of the Island was much better in 1934 than in 1933, the death rate having fallen from 19.3 to 17.06 per 1,000 population.

The mean Island rainfall recorded for each of the 4 years up to and including 1934 was respectively 91.53, 75.97, 116.53 and 79.82 inches as compared with an average for the 60-year period ended 1934 of 73.87 inches. Although the 1934 rainfall was nearly normal, the first quarter of the year, usually dry, was marked by a continuation of rains following the rainstorms of late 1933 with the result that the extensive collections of water were maintained far into 1934 and the first half of the year showed a wider distribution of Malaria than had been seen in recent years. The provisions for treatment and control were adequate, however, to prevent any general increase in mortality from the disease.

There was an outbreak of Malaria in the inland district of Porus in Manchester, involving a few hundred persons, due to lake formation of rain water complicated by shortage of food supplies destroyed by these lakes. The district being ordinarily free of Malaria, this outbreak was unusually severe with several deaths.

An epidemic of Typhoid Fever occurred in the parish of St. Ann in the latter part of the year with 125 cases but very few deaths.

Further investigations confirm the information as to distribution of Yaws indicated by the survey map submitted in Reports for 1933; the disease being rare in dry lowland areas and high in the wet uplands of the interior.

Public Health Work.

Further progress was made during the year in taking over the activities initiated on a co-operative basis between the Government and the Rockefeller Foundation. The latter has now ceased to contribute to Parochial School Dental Clinics, and the Government has assumed complete financial responsibility for the Tuberculosis Dispensary.

The Central Board of Health continued to assist the Local Boards of Health in the control of Malaria, Tuberculosis and Yaws, and to maintain the School Dental Clinics.

The special development in Anti-Tuberculosis work is dealt with in detail in the Report of the Senior Sanitary Medical Officer. It will be seen that very satisfactory and rapid progress is being made in this field.

Central Laboratory.

The Laboratory is now accommodated in adequate buildings with facilities for work in separate departments, e.g., Serology, Pathology, Bio-Chemistry, Urinalysis, Examinations of Milk and Water.

With this installation and reorganization, it was found possible to greatly extend the facilities of the Laboratory in the direction of Public Health, free services being now offered to private practitioners for the following examinations:—(1) Urine for Typhosus, (2) Sputum for B. Tuberculosis, (3) Specimens for Venereal Disease, (4) Blood for Widal Test, (5) Blood for Parasites, (6) Blood culture for B. Typhosus, (7) Faeces for (a) Parasites, (b) Ova, (c) Amoebae, (d) Enteric Group, (8) Throat swabs for Klebs-Loeffler Bacillus.

Control of Nursing Homes.

A Bill was passed for the registration and supervising of Nursing Homes, and progress has been made in collecting information with regard to them, with a view to registration.

Child Hygiene.

The Child Hygiene programme being undertaken by the Child Welfare Association in Kingston, which deals with infants and young children, was further developed during the year by the provision of a School Medical Officer and two School Nurses by the Kingston and St. Andrew Corporation. This being the first appointment of the kind in Jamaica.

General Diseases.

The following Table shews the comparison of the more important groups of Diseases of In-patients in the Hospitals during 1933 and 1934:—

	1933.		1934.	
Diseases.	Cases.	Deaths.	Cases.	Deaths.
Diseases of the Nervous System	566	77	581	89
Diseases of the Eye ..	421	..	597	..
Diseases of the Circulatory System	719	135	749	155
Diseases of the Respiratory System	1,638	322	1,306	205
Diseases of the Digestive System	3,322	396	4,475	250
Diseases of the Genito-Urinary System (Non Venereal) ..	3,166	172	3,438	189
External Causes	3,662	125	4,127	76

Communicable Diseases.

These are dealt with in detail by the Senior Sanitary Medical Officer in the following Section on Sanitation.

T. J. Hallinan,
Superintending Medical Officer.

III.—SANITATION.

1. Administration.

(a) *Personnel.*—Dr. H. M. Johnston obtained the qualifications of Master of Public Health, Harvard University and was appointed Assistant Medical Officer of Health for Kingston and St. Andrew on 1.8.34.

Dr. A. A. Peat proceeded to Harvard University on a Fellowship granted by the Rockefeller Foundation, his post in the Yaws Commission being filled by Dr. H. D. Chambers.

Dr. S. E. Ferreira was appointed to act as Medical Officer in the Yaws Commission on 14th September, 1934.

The attendances of members of the Central Board of Health at its 11 meetings were:—

Major T. J. Hallinan, C.B.E., Chairman	11
Hon. Dr. Lawson Gifford	10
Mr. N. Roots	11
Dr. D. J. Phillips	5
Dr. S. Lockett	8
Major D. T. Richardson	5
Mr. J. M. Nethersole, C.B.E.	7

The Senior Sanitary Medical Officer was present on 8 occasions.

1. *Parochial Staff.*—Table I shews the staff employed by the Local Boards of Health.

TABLE I.

Parish.	Health Officers.		Sanitary Inspectors.				Nurses	Clerks	Dental Surgeon.	Others
	Wholetime.	Part-time.	Chief.	Wholetime.	Part-time.	Specially for Latrine Construction.	Part-time.	Wholetime.	Part-time.	
Kingston ..	3	..	1 (1)	15 (10	..	..	2	3	1	2
St. Andrew ..		..	1 (1)	14 (6)	..	..	5	1	1	..
St. Thomas ..	..	1	1 (1)	4 (3)	1	..	4	..	..	..
Portland ..	1	..	..	1 (1)	3 (2)	..	2	1	1	2
St. Mary ..	1	..	1 (1)	8 (6)	..	..	5	2	1	..
St. Ann ..	..	4	..	8 (3)	1	3 (1)	1	..	..	..
Trelawny ..	1	..	..	4 (3)	..	..	3	1	1	..
St. James ..	1	..	..	6 (4)	..	1	4	..	1	..
Hanover ..	1	..	..	2 (2)	1 (1)	..	3	1	1	1
Westmoreland ..	..	2	1 (1)	1	5	..	6	..	..	..
St. Elizabeth ..	1	..	..	4 (4)	..	..	3	..	..	1
Manchester ..	..	1	1 (1)	5 (2)	..	..	6	..	..	..
Clarendon ..	1	..	1 (1)	8 (3)	..	..	5	..	1	..
St. Catherine ..	1	..	1 (1)	4 (3)	5 (3)	..	3	1	1	2
Port Royal ..	..	1	..	..	1	..	..	..	..	..

Note.—The Corporate Area employed 1 Oculist for part of the year and appointed a School Medical Officer for the other part.

The figures in brackets shew the number of persons who hold a Certificate from the Sanitary Inspectors' School or the Royal Sanitary Institute.

2. *Staff of Central Board of Health.*—Table II shews the Staff employed by the various Commissions.

TABLE II.

Commissions.	Medical Officers.	Overseers of Works.	Clerks.	Microscopists and Technicians.	Field Officers.	Nurses.
Hookworm ..	2	2	6 (2)	4	16 (9)	..
Malaria	1	..	..	2 †	7 (4)	
Tuberculosis ..	2	..	..	3 *	..	4 ‡
Yaws	3 †	..	4	4	10 (7)	..

Note.—The Rockefeller Foundation provides a Central Laboratory with Staff and equipment for the Yaws Commission, 3 Specialists for work on Yaws and Tuberculosis and 10 Sanitary Inspectors for Yaws work.

The figures in brackets shew the number of persons who hold a Certificate from the Sanitary Inspectors' School or the Royal Sanitary Institute.

† 1 paid by Rockefeller Foundation.

* Also do clerical work.

‡ 2 paid by Anti-Tuberculosis League.

3. *School Dental Clinics.*—The following parishes maintained School Dental Clinics: Kingston and St. Andrew, Portland, St. Mary, Trelawny, St. James, Hanover, Clarendon, and St. Catherine.

The Central Board of Health contributed 25% of the cost in the parishes of St. Catherine, Portland, Trelawny, St. James, Hanover and Clarendon.

Detailed Reports of the Commissions are given in Sections IV, V, IX and X of Part II of the Report.

(b) *Finance*—Table III shews the expenditure of the various parishes for Public Health.

Table III.

	Kingston and St. Andrew.	St. Thomas.	Portland.	St. Mary.	St. Ann.	Trelawny.	St. James.	Hanover.	Westmoreland.	St. Elizabeth.	Manchester.	Clarendon,	St. Catherine.	Port Royal.	
	£ *	£ *	£ *	£ *	£	£ *	£ *	£ *	£	£ *	£ *	£ *	£ *	£	
1. Administration— H. O. Salaries ..	1,483	300	700	700	480	650	675	750	400	700	400	750	800	500	..
T. A. ..	335	100	150	200	280	200	100	100	50	150	100	150	200	..	..
S. I. Salaries ..	4,299	800	470	1,232	971	600	792	240	450	380	601	1,000	1,014	52	..
T. A. ..	691	..	46	275	145	150	133	60	50	95	168	150	362	..	..
Clerks ..	413	..	117	210	..	120	78	50	..	..	..	..	120	..	..
Messengers ..	32	..	21	26	..	18	..	14	..	2	..	..	21	..	..
Total 1 ..	7,253	1,200	1,504	2,643	1,876	1,738	1,778	1,214	950	1,327	1,269	2,050	2,517	552	..
2. Cleansing ..	2,271	478	856	1,896	1,021	303	1,186	318	506	221	306	205	1,361	75	..
3. I. D. Prevention ..	901	9	72	96	489	4	479	21	128	34	47	17	101	5	..
4. Cemeteries ..	2,310	89	165	238	68	19	..	46	61	10	122	10	175	17	..
5. Child Welfare ..	1,833	148	65	116	20	60	314	120	273	45	400	..	141	..	..
6. Conservancy ..	..	..	45	150	92	..	..	8	106	..	97	37	152	145	..
7. Drainage ..	..	156	191	139	352	20	199	82	..	11	..	..	304	..	..
8. Water Supply ..	350	2,791	499	239	726	160	114	224	..	128	184	..	708	53	..
9. Miscellaneous ..	862	17	64	134	3	28	491	53	..	49	..	100	638	..	..
Total 2 ..	8,527	3,688	1,957	3,008	2,771	594	2,783	872	1,074	498	1,156	369	3,580	295	..
Grand Total ..	15,780	4,888	3,461	5,651	4,647	2,332	4,561	2,086	2,024	1,825	2,425	2,419	6,097	847	£59,043

*Salaries and Travelling Allowances of Medical Officers of Health paid by Central Government.

The Central Government spent the following amounts on matters affecting the Public Health:—

	£	s.	d.
Central Board of Health Expenses	10,187	6	4
Quarantine Expenses ..	683	7	1
Hookworm Commission ..	6,734	11	0
Yaws	2,033	8	2
Vaccination Fees	1,413	13	4
Infectious Disease Control ..	924	12	4
Child Welfare Association ..	1,000	0	0
Malaria Commission ..	4,071	8	3
Bureau of Health Education ..	56	8	11
School Dental Clinics ..	421	3	4
Training School for Sanitary Inspectors	36	15	2
Tuberculosis Clinic	2,399	15	9
	£29,962	9	8

The Rockefeller Foundation spent £8,404 1s. 1d., as follows:—

	£	s.	d.	£	s.	d.
Central Office	..			548	18	2
Tuberculosis—X-Ray Laboratory	615	3	10			
Dispensary ..	416	9	6			
Mobile Unit ..	608	9	0			
Special Survey ..	283	6	2			
Research work, Mental Hospital ..	182	14	9	2,106	3	3
Water Improvements and Sanitation ..				18	17	7
School Dental Clinic, Portland				65	5	5
Yaws Commission				5,008	16	8
Fellowship Expenditure of Dr. A. A. Peat ..				28	0	0
Miscellaneous				628	0	0
				£8,404	1	1

This does not include the salaries of the Director for Jamaica and five other Specialists on the Local Staff of the Foundation.

(c) *Legal.*—The following Laws affecting Public Health were enacted in 1934:—

No. 4.—A Law to admit in Evidence the Certificate of the Island Chemist or Deputy Island Chemist in cases brought under the Dangerous Drugs Law, 1924 or any Law amending or substituted for the same.

No. 9.—A Law to provide for the Registration and Inspection of Nursing Homes and for purposes connected therewith.

No. 11.—A Law to amend the Kingston Building Law, 1883, Amendment Law, 1907.

2. VITAL STATISTICS.

Population.—The estimated population on 31st December, 1934, was 1,104,775 distributed by parishes as shown in Table IV.

Birth Rate.—34,247 births were registered, giving a rate of 31.19 per 1,000 population. 71.89% of the births were illegitimate.

Deaths—Table IV shews the population, total deaths and deaths from certain causes by parishes. The crude death rate fell from 19.3 in 1933 to 17.06 in 1934.

Infant Mortality.—The Island death rates under 1 year and under 5 years were respectively 131 and 181 per 1,000 live births as compared with 149 and 214 in 1933. The infant death rate under 1 year for Kingston was 114.

Table IV shews by parishes, the population, deaths from certain causes, and the number of each medically certified. The percentage of total deaths medically certified showed further improvement.

TABLE IV.

Parish.	Estimated Population 31st December, 1934.	Pulmonary Tuberculosis.	Typhoid Fever.	Malaria Fever.	Blackwater Fever.	Undefined Fever.	Diarrhœa and Enteritis.	Chronic Nephritis.	Cancer and other Malignant Tumours.	Infantile Convulsions (under 5 years of age).	Congenital Debility.	Pneumonia.	Other Ill-defined and unspecified Causes.	All other Causes.	Total Deaths.
Kingston ..	74,592	158	81	51	1	29	70	83	62	13	131	127	13	1,019	1,838
Port Royal ..	1,088	1	..	..	..	..	2	..	2	2	..	..	..	4	11
St. Andrew ..	60,788	226	4	36	..	112	85	40	43	72	172	38	61	779	1,668
St. Thomas ..	49,858	55	18	71	..	137	35	50	13	113	55	26	68	398	1,039
Portland ..	59,409	69	6	24	..	163	10	44	19	40	108	29	62	410	984
St. Mary ..	87,440	112	41	82	..	244	63	71	20	93	141	30	82	645	1,624
St. Ann ..	91,638	81	26	25	..	100	31	50	29	75	87	20	81	581	1,186
Trelawny ..	42,726	31	8	28	1	104	23	15	16	78	82	25	48	302	761
St. James ..	52,636	33	25	30	..	159	21	63	14	86	88	18	78	336	951
Hanover ..	48,171	36	20	64	..	70	35	35	11	117	50	9	29	339	815
Westmoreland ..	85,454	35	16	88	..	162	44	41	24	150	138	39	71	579	1,387
St. Elizabeth ..	100,740	57	7	54	..	224	17	44	20	270	116	15	57	676	1,557
Manchester ..	81,612	52	8	29	..	151	19	49	20	71	117	35	76	585	1,212
Clarendon ..	105,965	64	15	18	..	380	33	43	18	124	127	26	170	634	1,652
St. Catherine ..	116,412	103	21	78	..	432	56	67	27	118	168	35	140	801	**2,046**
Island's gain by excess Arrivals over Departures from last Census day to 30th June ..	46,246	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total ..	1,104,775	1,113	296	678	2	2,467	544	695	338	1,422	1,580	472	1,036	8,088	18,731
No. med. certified ..	..	785	291	601	2	15	363	436	288	17	147	419	1	4,030	7,395

Table V shews the deaths by parishes and quarters for the year 1934. The corresponding death rates for 1933 are shewn for comparison.

TABLE V.

Parish.	March.	June.	September.	December.	Death Rates, 1933.	Death Rates, 1934.
Kingston ..	523	445	423	447	29.5	24.80
Port Royal ..	1	3	5	2	3.7	10.11
St. Andrew ..	506	411	339	412	31.8	27.56
St. Thomas ..	277	281	221	260	22.5	20.91
Portland ..	267	260	210	247	17.7	16.62
St. Mary ..	441	416	342	425	18.0	18.66
St. Ann ..	347	301	243	295	15.2	13.06
Trelawny ..	201	192	185	183	21.4	17.94
St. James ..	265	233	228	225	22.6	18.28
Hanover ..	208	205	196	206	18.8	17.05
Westmoreland ..	414	288	296	389	18.6	16.33
St. Elizabeth ..	525	347	327	358	18.1	15.58
Manchester ..	328	321	257	306	17.3	15.00
Clarendon ..	473	408	364	407	18.3	15.72
St. Catherine ..	574	500	409	563	19.1	17.68
Total ..	5,350	4,611	4,045	4,725	19.3	17.06

3. COMMUNICABLE AND INFECTIOUS DISEASES.

Table VI shews the notification of cases of Infectious Diseases for the year, by months and by parishes.

TABLE VI.

	Typhoid.	Para Typhoid.	Dysentery.	Pulmonary Tuberculosis.	Leprosy.	Chicken Pox.	Diphtheria.	Scarlet Fever.	Erysipelas.	Cerebro-Spinal Meningitis.	Puerperal Fever.	Poliomyelitis.	Total.
By Months—													
January ..	89	..	33	92	4	32	3	..	2	..	2	..	257
February ..	103	..	41	120	5	29	4	..	2	1	4	..	309
March ..	80	..	44	123	2	31	1	1	2	2	4	1	291
April ..	100	1	19	131	2	42	..	..	1	..	5	..	301
May ..	128	..	30	121	6	21	1	..	3	..	2	..	312
June ..	100	..	13	115	3	155	1	..	3	1	2	1	394
July ..	107	..	7	135	1	33	1	..	2	3	2	1	292
August ..	136	..	16	109	1	12	2	..	1	1	2	3	283
September ..	145	..	11	117	2	5	2	1	1	1	4	..	289
October ..	149	..	70	131	1	76	1	1	..	2	5	2	438
November ..	139	..	32	112	1	13	..	1	2	1	2	..	303
December ..	84	..	17	96	1	12	..	..	2	..	2	2	216
Total ..	1,360	1	333	1,402	29	461	16	4	21	12	36	10	3,685
By Parishes—													
Kingston ..	291	..	184	414	1	26	6	2	3	4	2	3	936
St. Andrew ..	143	..	37	144	3	124	7	1	1	2	2	1	465
St. Thomas ..	60	..	12	108	..	1	..	..	3	..	2	..	186
Portland ..	21	..	17	65	..	15	..	..	..	..	1	..	119
St. Mary ..	107	..	22	80	1	21	..	..	..	..	3	..	234
St. Ann ..	157	..	8	88	1	21	3	..	2	..	4	..	284
Trelawny ..	107	..	1	43	5	7	..	..	..	..	1	1	165
St. James ..	120	..	4	84	4	50	..	1	1	6	3	..	273
Hanover ..	40	..	8	28	..	4	..	..	5	..	7	1	93
Westmoreland ..	49	1	9	30	1	49	..	..	1	..	..	..	140
St. Elizabeth ..	27	..	1	52	3	86	..	..	..	..	1	2	172
Manchester ..	24	..	7	64	1	5	..	..	3	..	4	..	108
Clarendon ..	101	..	7	79	6	19	..	..	2	..	4	2	220
St. Catherine ..	107	..	15	121	3	32	..	..	..	..	2	..	280
Port Royal ..	6	..	1	2	..	1	..	..	..	..	..	..	10
Total ..	1,360	1	333	1,402	29	461	16	4	21	12	36	10	3,685

Pulmonary Tuberculosis.—Table VII shews case rates and death rates annually for the 5-year period ended 31st December, 1934:—

TABLE VII.—PULMONARY TUBERCULOSIS.

Year.	Estimated mean population 30th June.	Deaths.	Death Rate per 100,000 population.	Cases.	Case Rate per 100,000 population.
1930 ..	1,008,614	1,297	128.6	1,082	107.3
1931 ..	1,038,921	1,456	140.1	1,327	127.7
1932 ..	1,061,105	1,252	118.0	1,307	123.2
1933 ..	1,081,854	1,191	110.1	1,241	114.8
1934 ..	1,097,775	1,113	101.4	1,402	127.8

47.5% of the total cases were notified in the three parishes of Kingston, St. Andrew and St. Catherine, 22.4% being in Kingston alone. The close association here with bad housing and overcrowding in slum areas is evident and these areas serve as foci for dissemination to all parts of the Island. Health Officers in rural areas find that 20% to 30% of the primary cases found there among the labouring classes contract the disease in Kingston.

The Tuberculosis Commission conducted by co-operation between the Government and the Rockefeller Foundation since 1928 finally submitted a programme for control in 1933 which was accepted by Government and very important progress was made in 1934 in adopting this programme, the chief features being:—

(a) The Dispensary in Kingston, formerly operated by the Tuberculosis Commission, and which reaches about 28% of the total cases notified in the Island, was taken over entirely by the Government and now is the centre of all tuberculosis activities.

In eight other parishes the use of the Dispensary as the centre and pivot of all tuberculosis activities is now well established. At the full-time Kingston Dispensary, which serves St. Andrew as well, there were recorded a total attendance of 10,607 old and new cases, 330 new cases, 3,257 X-ray Examinations, 251 operations for artificial pneumothorax, 107 phrenicectomies.

(b) Pending the construction of a Tuberculosis Hospital in Kingston, as called for in the programme, the Government has temporarily taken over the management of the Tuberculosis Wards in the Kingston and St. Andrew Corporation Poor House with 44 beds which are now run in conjunction with the Dispensary by the two Specialist Officers provided by the Government.

(c) Pending more complete provision of special wards at District Hospitals, a few beds have been allocated in several of them for treatment of selected cases under the guidance of a Tuberculosis Officer, so that the District Medical Officers and Medical Officers of Health may obtain experience in modern medical and surgical methods.

(d) A Travelling X-ray Unit—called the Lady Stubbs Memorial X-ray Unit to commemorate her work on Tuberculosis was presented to Government by the Anti-Tuberculosis League, and this visits Parochial Dispensaries and Hospitals accompanied by a Tuberculosis Officer.

(e) Some Government Medical Officers have attended at the Kingston Dispensary to gain special experience.

Health Officers in the following parishes provided dispensary services during the year holding clinics at various centres in their areas—St. Catherine, Portland, St. Mary, Trelawny, St. James, Hanover, St. Elizabeth and Manchester—and all of these parishes except Hanover have organized Local Branches of the Anti-Tuberculosis League in which the Health Officer plays an active part. A total attendance of 3,884 persons was recorded at these clinics.

The value and efficiency of Parochial Dispensaries outside of Kingston were greatly increased during the year by the provision of the Lady Stubbs Travelling X-ray Unit which, during 5 months of activity in 1934, visited all rural parishes, and took 353 X-ray pictures.

Routine out-door dispensary activities in Kingston, Spanish Town and Montego Bay are performed by nurses, all of whom are partly maintained by funds from the Anti-Tuberculosis League, but at all other Parochial Dispensaries these duties are carried out by the Sanitary Inspector as a part of their routine. The value of Sanitary Inspectors in this work is indicated by the fact that, excluding the cases notified by the Kingston Dispensary, the Medical Officers of Health notified 20% of all the other cases, many Sanitary Inspectors showing particular efficiency in bringing contacts and suspicious cases to clinics and in instructing infected families in preventive measures.

One very important result of developing indoor and outdoor dispensary activities is the improvement of tuberculosis records. Prior to the year 1928 when the Tuberculosis Commission began activities, there were always more deaths recorded than cases each year, but the improvement in notification is shown in Table VII and the year 1934 shews the largest number of cases in any year although the number of deaths continue to fall.

Table VIII shews the percentage of deaths attributed annually to Tuberculosis which are medically certified.

TABLE VIII.

Year.	Total Deaths recorded from Pulmonary Tuberculosis.	Number certified.	Percentage certified.
1930 ..	1,297	568	43.8
1931 ..	1,456	722	49.6
1932 ..	1,252	735	58.7
1933 ..	1'191	823	69.1
1934 ..	1,133	785	61.0

This improvement is due to follow-up on cases but the lack of exact information with regard to a large number of deaths attributed to Tuberculosis is unsatisfactory and we are still far short of adequate knowledge of the extent of the problem in some parishes. It is to be noted, however, that in Kingston in 1934 there were 414 cases and 158 deaths.

Laboratory examinations of sputum is carried out at the Kingston Dispensary and by those Health Officers who provide dispensary services, both for their own cases and for those of private practitioners.

The Anti-Tuberculosis League.—This voluntary Association was formed in 1927 and has increased its activities every year, so that there is now a Branch established in every parish except Clarendon and St. Ann. The League maintained three full-time nurses and one part-time for home visiting and dispensary duties. Medical comforts are supplied to many needy cases in the Corporate Area and in several rural parishes, and transportation expenses are provided for poor patients to dispensaries or X-ray examinations.

A programme of Public Education was maintained by lectures and the distribution of pamphlets.

The St. Elizabeth Branch has built a Sanatorium at Rockcliffe to accommodate 8 patients which was opened on the 31st May, 1934.

On the 27th November, 1934, the League presented to the Government a Travelling X-ray Unit consisting of a Ford van and generator with X-ray outfit. This promises to be a most important contribution towards the development of the Government's control programme outside of Kingston.

The Tuberculosis Commission continued research work during the year, an account of which will be found in Section IV of Part II of the Report.

Enteric Fevers.—Table IX shews the case rates and death rates recorded annually for the 5-year period ended 31st December, 1934.

TABLE IX.—Enteric Fevers.

Year.	No. of Cases.	No. of Deaths.	Case Rate per 100,000 population.	Death Rate per 100,000 population.
1930 ..	928	113	92.	11.2
1931 ..	900	110	86.8	10.6
1932 ..	929	264	87.6	24.9
1933 ..	1,092	223	100.9	20.6
1934 ..	1,361	296	123.2	26.9

Table X shews cases notified by parishes annually for the 5-year period ended 31st December, 1934.

TABLE X.—Enteric Fevers.

Parish.	Cases 1930.	Cases 1931.	Cases 1932.	Cases 1933.	Cases 1934.
Kingston ..	168	156	124	221	291
St. Andrew ..	83	80	53	165	143
St. Thomas ..	28	50	87	44	60
Portland ..	30	44	45	63	21
St. Mary ..	69	77	119	49	107
St. Ann ..	74	50	54	41	157
Trelawny ..	30	23	20	100	107
St. James ..	76	137	118	89	120
Hanover ..	30	3	11	12	40
Westmoreland ..	134	47	80	35	50
St. Elizabeth ..	38	55	70	35	27
Manchester ..	53	38	44	49	24
Clarendon ..	62	58	53	147	101
St. Catherine ..	50	82	51	42	107
Port Royal ..	3	..	..	..	6
Total ..	928	900	929	1,092	1,361

It is disquieting to note that the recorded cases and deaths have increased each year since 1932. This may be due in some measure to improved reporting or to the unusual weather conditions of the past 3 years.

The high figure for 1934 included an epidemic in St. Ann with 125 cases, but the gradual reduction which appeared to be occurring for a few years prior to 1932 has not been maintained, and the problem calls for most vigorous enforcement of preventive measures.

Table XI shews cases and deaths recorded by parishes for 1934.

TABLE XI.—Enteric Fevers.

Parish.	Population (31.12.34.)	Cases.	Deaths.
Kingston	74,592	291	81
St. Andrew	60,788	143	4
St. Thomas	49,858	60	18
Portland	59,409	21	6
St. Mary	87,440	107	41
St. Ann	91,638	157	26
Trelawny	42,726	107	8
St. James	52,636	120	25
Hanover	48,171	40	20
Westmoreland	85,454	50	16
St. Elizabeth	100,740	27	7
Manchester	81,612	24	8
Clarendon	105,965	101	15
St. Catherine	116,412	107	21
Port Royal	1,088	6	—

The Officers of the Hookworm Commission working in conjunction with the Local Boards of Health carried out surveys on latrine maintenance in sections of the parishes of Kingston, St. Andrew, St. James, St. Catherine and Westmoreland. The results are shewn in Table XII.

TABLE XII.

Parish.	Total Number homes inspected.	Homes with insanitary latrines.	Homes without latrines.	Homes with sanitary latrines.
Kingston	1,828	82%	0.2%	18%
St. Andrew	130	86%	8.5%	5.3%
St. Catherine	2,689	27.7%	35%	38.8%
Westmoreland	245	39%	58%	3%

The Surveys in Kingston and St. Andrew in the most crowded poorer sections revealed a most unsatisfactory condition in that over 85% of all pit latrines were insanitary, which is worse than obtains in most rural areas.

The insanitary condition of latrines in St. Catherine with a high incidence of Typhoid in 1934 is strongly commented on by the Medical Officer of Health.

Progress in construction and correction of defects is very slow in St. Thomas, Portland, St. Elizabeth and Clarendon, and there was almost no activity in Hanover and Westmoreland.

Slow progress was made in eliminating the Bucket System of excreta disposal in Port Antonio as recommended by the Central Board of Health following the epidemic there in 1933. In Port Maria, which is mainly provided with a bucket system, the Medical Officer of Health has installed some experimental pit latrines using concrete cylinders to line the pits which is much cheaper than stone packing and they are quite satisfactory. On his advice several better class homes have installed water carriage systems with absorption pits and the Parochial Board is now giving consideration to proposals to replace the bucket system with a water carriage system.

Surveys in Montego Bay in 1933 shewed that the condition of pit latrines was very unsatisfactory but good progress was made during 1934 in making these sanitary. Nevertheless attention should be given to the importance of developing water carriage disposal in this town.

An epidemic of Typhoid Fever occurred in the parish of St. Ann in the latter part of the year. A total of 140 cases were notified between 1st July, 1934 and 31st December, 1934, 93 cases having been admitted to the St. Ann's Bay Hospital with 16 deaths and to the Cave Valley Hospital 7 cases without any deaths.

Dysenteries.—Of the 333 cases notified, 211 were of Amoebic type, 45 were Bacillary and the remainder Unclassified.

Epidemics of Amoebic Dysentery occured in the Kingston General Penitentiary and the Lunatic Asylum with 40 and 41 cases respectively. In the General Penitentiary the cases were entirely confined to the Male Division and, in both Institutions, the evidence pointed to fly-borne infection.

Greater interest in establishment of diagnosis by Laboratory aid is observed.

Diphtheria.—16 cases were notified as compared with 29 in 1933, 13 of them being in the Corporate Area of Kingston and St. Andrew.

Since 1930 cases and deaths recorded annually are as follows:—

Year.	Cases.	Deaths.
1930 ..	8	1
1931 ..	14	2
1932 ..	26	3
1933 ..	29	4
1934 ..	16	2

22 of the cases in 1933 and 13 of those in 1934 were from the Corporate Area of Kingston and St. Andrew. 16 of the 122 specimens submitted for Laboratory examination were positive.

Leprosy.—29 cases were notified during the year. The number of inmates of the Lepers' Asylum has remained at about 120 to 125 for some years. During 1934 there were 34 admissions and of the 22 discharges, 9 were due to death, 7 to arrest of the disease and 6 to absconding. 29 cases were notified during the year and there is indication that a few endemic foci exist in certain parts of the Island.

Malaria.—Although the 1934 rainfall was nearly normal, the first quarter of the year, usually dry, was marked by a continuation of rains following the rainstorms of late 1933 with the result that the extensive collections of water were maintained far into 1934 and the first half of the year showed a wider distribution of Malaria than had been seen in recent years. The provision for treatment and control were adequate, however, to prevent any general increase in mortality from the disease.

There was a serious outbreak in the inland district of Porus in Manchester, involving a few hundred persons, due to lake formation of rainwater, complicated by shortage of food supplies destroyed by these lakes. The district being ordinarily free of Malaria this outbreak was unusually severe with several deaths.

After 7 years of study and demonstration the Malaria Commission has provided adequate training to staffs of Local Boards of Health for dealing with this problem, and the trained Medical Officers of Health and Sanitary Inspectors have the technical knowledge required for carrying out control work under the direction of the Government Malaria Officer. During 1934 the Commission continued to provide temporary technical and financial assistance to the Local Boards of Health of Trelawny, St. James, Clarendon, St. Thomas, St. Elizabeth and Westmoreland but further steps were taken to urge Boards towards assuming responsibility for permanent Malaria control, and some progress was made in this direction, the most important items being (i) the drainage schemes undertaken by the Public Works Department and the Kingston and St. Andrew Corporation in Lower St. Andrew, (ii) control measures by the Portland Board at Buff Bay and Hope Bay, (iii) control measures by the Trelawny Board in Falmouth, Clark's Town and Hampden.

A detailed account of Malaria and its control is given in the Report of the Malaria Officer in Section XI of Part II of the Report.

Yaws.—The 1933 Report shewed a map of Jamaica with the incidence of Yaws as found in 1932 and also described briefly the plan of control set in motion in 1933. The Report of the Yaws Commission (see Section V of Part II of the Report) shews that the Mobile Treatment Units have rapidly effected very marked reduction of infectious cases in areas of heavy infection in St. Thomas and St. Mary and the incidence has remained at a low level for from 1 to 2 years.

It is, however, evident from the experience in these two parishes, and in Portland, that the permanent Parochial Staffs of Sanitary Inspectors which are not being increased to deal with developing activities on Yaws, Malaria, Tuberculosis, etc., are not large enough to carry out the constant follow-up work required in treated areas.

In heavily infected districts, such as parts of St. Andrew, St. Catherine, Clarendon and St. James, not yet reached by the Mobile Units of the Yaws Commission, the permanent staffs of Sanitary Inspectors have not been able to meet requirements due mainly to shortage of personnel, and in such districts the assistance of the Mobile Units will be necessary for some time both for original surveys and follow-up work.

In less heavily infected areas the existing staffs of Sanitary Inspectors have produced very favourable results during the year, and further improvement may be expected as they gain experience. Their usefulness in the campaign is shewn in that they reported approximately 18,685 new cases during the year.

92,195 treatments were given by District Medical Officers and 2,716 by Medical Officers of Health. A total of 116,654 treatments were thus given in 1934 by all agencies to approximately 27,005 cases, in comparison with 33,338 treatments recorded in 1932 and 57,571 in 1933 and there is already evidence that, where the plan has been adequately followed, the incidence of infectious cases of Yaws has been markedly reduced.

4. WATER SUPPLIES.

The chief improvement during the year outside of Kingston were as follows:—

St. Mary.—Construction of pipe supply for Highgate and Richmond begun. Improvements to Intake of Oraeabessa supply.

Manchester.—Construction of pipe supply for Porus begun.

St. Thomas.—Expenditure of £1,048 on constructional protection for minor rural supplies.

5. FOOD SUPPLIES.

Meat.—Conditions are as reported in 1933 except that a slaughter house was completed for Montego Bay, though it is not yet in use. The Manchester Board is considering proposals for slaughter houses for Mandeville and other towns.

Milk.—452 dairies and milk shops were recorded as being registered at the end of the year. 298 of them being in the Corporate Area, where steady improvement is being obtained in the sanitation of dairies and the handling of milk.

Some improvement is also recorded in other parishes.

6. MATERNITY AND CHILD WELFARE.

The Child Welfare Association in Kingston increased its activities during the year.

The Kingston and St. Andrew Corporation provided a School Medical Officer and two School Nurses during the year. . 1,878 out of 2,573 children were found to have physical defects and 178 of the defective children were treated. One of the chief defects found was Optic Neuritis.

7. EDUCATIONAL MEASURES.

During the year Volume 9 of the Jamaica Public Health was published, an edition of 20,000 copies being issued each month.

1,187 lectures were given by Medical Officers of Health and Sanitary Inspectors to an estimated attendance of 82,966 persons.

8. RECOMMENDATIONS.

My recommendations remain substantially the same as in the previous year, although some progress has been recorded with respect to some of them. I have to add the following:—

1. Provision of a permanent Staff of the Central Board of Health to maintain satisfactorily the various activities which have been developed in co-operation with the Rockefeller Foundation and the establishment of these activities on a permanent basis.

The activities initiated by the Central Board of Health in recent years deal with (i) Hookworm Disease and other diseases of soil pollution, (ii) Malaria, (iii) Tuberculosis, (iv) Yaws, (v) Public Health Education and (vi) Sanitary Engineering. With the exception of a Malaria Officer the Central Board of Health has not been provided with any extra permanent staff, technical or clerical to insure that these activities will be properly maintained.

2. Provision of extra Sanitary Inspectors to overtake the increasing work in all parishes and particularly in St. Catherine, Portland, St. Elizabeth and St. Thomas.

J. M. HALL,
Senior Sanitary Medical Officer.

IV.—PORT HEALTH WORK.

The Regulations of the Board have been carefully carried out during the year and the Island has remained free from quarantinable diseases.

There have been no cases of Infectious Diseases arriving either by ship or plane.

Vessels are inspected at Port Royal by the Health Officer, and at the outports by the District Medical Officer and the sea planes at Harbour Head by the District Medical Officer for Kingston.

These services have been carefully carried out and without delay.

Several warships have arrived during the year. On approaching Jamaica they supply certain particulars by wireless which have been agreed upon, and if everything is in order, they are granted pratique by wireless.

The sea plane is much favoured as a means of rapid transportation. There were 262 arrivals and departures of planes during the year. There were also 15 war planes, which are not included in the above.

The possibility of conveyance of Yellow Fever by air transport is under careful regard.

At the present moment there is Yellow Fever in the Republic of Columbia and it has been there for some time, and the District Medical Officer for Kingston and the Health Officer for Port Royal have instructions to subject arrivals from the infected area to a close inspection and if necessary detention for examination.

The Quarantine Station is well equipped and ready to receive persons either for treatment or detention.

There were two detentions during the year.

There was an outbreak of Smallpox in an adjoining British possession and the regulations were brought into force and met the situation.

Poliomyelitis appeared in Havana during the year. Careful inspection was made of all arrivals from there but no one arrived suffering from the disease.

The telephone at Port Royal has given good service during the year.

The Boarding Launch at Port Royal has also given satisfaction.

Captain Tupper, Captain List and Dr. McLean were granted leave of absence during the year.

There were 30 fumigations during the year:—

19 with Cyanide Acid.
11 with Sulphur and fees amounting to £117 12s. 0d. were collected.

CHARLES DON,
Secretary, Quarantine Board.

V.—HOSPITALS AND DISPENSARIES.

The following is a list of the Hospitals and Institutions of the Medical Department:—

	No. of Beds.
Public Hospital, Kingston	380
Maternity Hospital, Kingston	30
Public Lunatic Asylum, Kingston	1,885
Public General Hospital, Morant Bay	30
Do. do. Hordley	40
Do. do. Port Antonio	55
Do. do. Buff Bay	50
Do. do. Annotto Bay	60
Do. do. Port Maria	65
Do. do. St. Ann's Bay	40
Do. do. Cave Valley	12
Do. do. Falmouth	25
Do. do. Ulster Spring	6
Do. do. St. James's	70
Do. do. Lucea	30
Do. do. Sav.-la-Mar	66
Do. do. Black River	70
Do. do. Mandeville	35
Do. do. Chapelton	33
Do. do. Lionel Town	50
Do. do. Spanish Town	70
Do. do. Linstead	60
Lepers' Home, Spanish Town	120

The work of Hospitals continued to increase as shewn below:—

	Kingston Public Hospitals.		District Hospitals.	
	1933.	1934.	1933.	1934.
In-patients admitted during the year)	6,962	7,818	16,578	16,738
Out-patients	162,257	171,318	63,892	94,960
Deaths	821	742	1,156	1,110

During 1934, 14, 173 major and minor operations were performed in the hospitals.

In the X-Ray Department of the Kingston Public Hospital 2,765 patients were examined as compared with 1,950 in 1933 and 1,352 in 1932.

Some of the Hospitals had difficulty in accommodating cases. Temporary beds were provided where possible, but if the demand continues to increase consideration will have to be given to providing increased accommodation.

DISPENSARIES.

The new Dispensary System established in the latter part of the year has already proved a great benefit to the community, free treatment being now available to about 80% of the whole population, and cheap treatment to about 10%. Preliminary reports from Hospital Dispensaries already show an increase of 300% in patients treated.

BUILDINGS.

The unsatisfactory state of Hospital buildings in general remains the same as was reported last year.

The Nursing Home of the Victoria Jubilee Hospital has been completed and is now occupied.

The work on the expansion of the Victoria Jubilee Hospital is still in progress and should be completed by the middle of 1935.

The Island Medical Office has transferred to new quarters in North Street to a house recently purchased by Government and the building vacated by the Island Medical Office has been converted into an excellent Laboratory.

T. J. HALLINAN,
Superintending Medical Officer.

(A) *Report and Returns of the Medical Superintendent, Kingston Public Hospital.*

Tables 1 and 2 show the number of cases during the year with results. The total deaths from all causes for the year was 742;—424 males, 318 females showing a reduction of the death rate of 79 over the previous year.

Table 3 shows the number of deaths occurring within 12 and 72 hours after admission.

Table 4 shows the number of patients admitted during the year and the countries and parishes in Jamaica from which these In-patients had their origin.

Table 5 gives in detail the number of medical and surgical cases treated for the year with results.

Table 6 shows the surgical operations performed.

Table 7 shows the work carried out in the Venereal Disease Clinic.

Table 8 gives the number of Casualties and Out-patients (including Eye, Ear, Nose and Throat and Orthopaedic Clinics) treated and prescriptions dispensed.

Table 9 shows the work performed in the Dental Clinic.

Table 10 shows the work of the Department of Radiology.

RECOMMENDATIONS.

1. *Increase in the Medical and Nursing Staffs.*—The work of the Institution has increased in every Department for the year under review.

The total number of Out-patients treated was 171,318, showing an increase of 9,061 over 1933. Surgical operations performed were 359 more than in the previous year.

These additions would materially help to reorganize the existing scheme of work and would be of greater benefit to the patient and the general efficiency of the Institution.

2. An additional Assistant Matron with qualifications in Massage and Electro-Therapy.

In view of the fact that the Kingston Hospital is the Nurses' Training School of the Island this recommendation deserves added consideration in order that more supervision and teaching can be given.

This also applies to the increase of Special Departments, where as a result more assistance and supervision is required in this branch.

3. Department of Radiology is still in its infancy in regard to space, accommodation and equipment, but I understand that this is under consideration to be remedied at an early date.

4. A new Operating Theatre, built on modern lines, is urgently required.

5. Three Wards (Alexandra, Victoria, Elizabeth) built about 80 to 90 years ago for the accommodation of persons of unsound mind, when the Lunatic Asylum was situated in the Compound should be demolished and modern wards erected in their place as they are unsuitable for medical treatment.

6. *Enlargement of the Out-patient Department.*—This building is now too small to accommodate the number of patients which increases yearly.

7. *Ward to Ward Telephone System.*—Owing to the distances between the various buildings, time and labour would be saved by the installation.

8. *Covered Ways.*—The Out-patient Department and several of the wards are not connected to the main building, which in the rainy season is a cause of great inconvenience.

The number of surgical cases applying for admission are far in excess of the beds available and in consequence the Surgical Unit is always at full strength. It is hoped that on completion of the new extension to the Jubilee Hospital early next year a certain percentage will be sent there thus relieving the Kingston Hospital.

The work of converting the old Laboratory into an Eye Clinic has been started and should be completed early next year; this Unit will prove an asset to the Institution.

The new Venereal Ward was completed and occupied in October; the old ward will be re-conditioned and used for male surgical cases.

There has been the same difficulty during the year for want of accommodation, mainly due to the large incidence of Malaria Fever.

The increase in the figures of this disease over last year amounts to 455.

Miss E. S. White was appointed Assistant Matron and reported for duty on the 15th August.

Staff Nurse E. Osbourne was promoted Sister

Twenty-six nurses from the Kingston Hospital and fourteen from the country Hospitals obtained certificates for their final examination.

Lectures to the Nursing Staff have been given by the Medical Officers, the Matron and Assistant Matron.

Official visits were paid by His Excellency the Acting Governor, Sir Arthur Jelf, on the 17th August, and by His Excellency the Governor and Lady Denham on the 7th November.

The Board of Visitors held their quarterly meetings and inspected the Institution.

I have to thank all those who have sent magazines, books, etc , for the use of the patients

His Excellency the Governor and Lady Denham visited the Hospital on Christmas Day and distributed toys to the children in Upper and Lower Nuttall Wards.

I have to record my appreciation of the loyal co-operation of the entire staff of the Institution in performance of their duties during the year under review.

Table I.

	Males.	Females.	Total.
Patients remaining in Hospital 1st January, 1934	192	123	315
Patients admitted during the year 1934	4,121	3,697	7,818
	4,313	3,820	8,133
Of those were cured	2,078	2,028	4,106
Of those were relieved	1,357	1,117	2,474
Of those were not relieved	341	205	446
Of those died	424	318	742
Remaining in Hospital December, 1934	213	152	365
	4,313	3,820	8,133

Table II.

Daily average number of beds occupied by male patients	203
Daily average number of beds occupied by female patients	153
Average stay in days of those who died, males	16
Average stay in days of those who died, females	18.3
Average stay in days of males, discharged	20.7
Average stay in days of females, discharged	16.4
Average stay in days of males remaining at end of year	21
Average stay in days of females remaining at end of year	22
Longest stay of any one patient in Hospital	365 days

Table III.

Patients who died within the following hours after admission:—

12		24		48		72		Total.	
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
78	39	75	43	49	27	32	22	234	131

Table IV.

Countries.	No.	Parishes.	No.
America	14	Kingston	4,903
Australia	1	St. Andrew	2,662
Canada	4	Port Royal	37
China	15	St. Thomas	53
Cuba	9	Portland	49
England	41	St. Mary	44
France	2	St. Ann	28
Germany	7	St. James	23
Grand Cayman	19	Trelawny	14
Haiti	4	Westmoreland	5
India	63	St. Elizabeth	15
Ireland	3	Manchester	30
Jamaica	7,917	Clarendon	67
Norway	9	St. Catherine	95
Panama	3	Hanover	5
Scotland	3	Foreign	103
Spain	3		
Syria	4		
Turks Island	12		
	8,133		8,133

Table V.—Diseases and Deaths in the Kingston Public Hospital during 1934.

	Cases.	Deaths.
I. *Epidemic, Endemic and Infectious Diseases*—		
1. Enteric Fever	372	73
5. Malaria Fever	882	32
7. Measles	2	
9. Whooping Cough	9	
10. Diphtheria	5	1
11. Influenza	8	
12. Mumps	5	
14. Dysentery—		
(a) Amoebic	88	11
(b) Other or unspecified	9	4
26. Yaws	1	
19. Erysipelas	1	
26. Acute Poliomyelitis	2	
22. Cerebro-spinal Meningitis	1	1
Other Diseases	7	1
32. Tetanus	15	8
34. Tuberculosis (all forms):—		
Respiratory System	194	34
Intestines and Peritoneum	18	2
Vertebral Column	13	2
Joint	11	1
Other Organs	13	
35. Syphilis	462	32
Congenital Syphilis	18	9
37. Gonococcal Infection:		
(a) Gonococcal Infection (ophthalmic excepted)	228	3
(b) Gonorrhoeal Ophthalmia	18	
38. Septicæmia	15	7
II. *General Diseases not included in* I—		
40. Cancer, Malignant Disease Pharynx, Œsophagus, Stomach, Liver and Annexa	16	6
Peritoneum, Intestines and Rectum	4	2
Female Genital Organs	18	1
Breast	11	
Skin	11	2
Other or unspecified Organs	18	4
41. Tumours not returned as malignant (Brain and Female Genital Organs excepted)	35	1
42. Rheumatic Fever	23	
43. Chronic Rheumatism, Osteo-Arthritis, Gout:		
(a) Chronic Rheumatism, Chronic Arthritis	60	
(b) Rheumatoid Arthritis, Osteo-Arthritis	9	
49. Diabetes Mellitus	42	11
50. Anaemia—Chlorosis, Pernicious and other Anaemias	9	4
52. Exopthalmic Goitre	8	
Other Diseases of the Thyroid Gland	4	3
54. Tetany	2	2
Other Diseases of the Thymus Gland	1	1
56. Diseases of the Spleen	2	
57. Leukaemia, Lymphadenoma	4	4
58. Alcoholism (acute or chronic)	2	
59. Chronic poisoning by mineral substances	3	
Other General Diseases	10	9
III. *Diseases of the Nervous System and Sense Organs*—		
63. Meningitis	7	7
64. Tabes Dorsalis	5	
65. Other Diseases of the Spinal Cord	2	
66. Cerebral Hæmorrhage	24	20
Cerebral Thrombosis	3	2
67. Paralysis of unstated origin—		
Hemiplegia	30	2
Other forms of Paralysis	10	4
68. General Paralysis of the Insane	1	
69. Other Forms of Insanity	18	
70. Epilepsy	12	
71. Convulsions (non-puerperal)	11	3
72. Infantile Convulsions (under 5 years)	5	3
73. Chorea	1	
74. Hysteria, Neuralgia	13	
Neuritis	34	1

	Cases.	Deaths.
76. Other Diseases of the Nervous System:		
Idiocy, Imbecility	2	
Other Diseases	13	3
77. Diseases of the Eye and Annexa	183	
78. Diseases of the Ear and of the Mastoid Sinus:		
Diseases of the Mastodi Sinus	11	
Diseases of the Ear	13	
IV. *Diseases of the Circulatory System—*		
79. Heart Diseases—Pericarditis	2	
80. Acute Endocarditis and Myocarditis:		
Endocarditis	11	2
Myocarditis	45	15
81. Angina Pectoris	1	
82. Other Diseases of the Heart:		
Aortic Valve Disease	56	44
Mitral Valve Disease	20	3
Aortic and Mitral Valve Disease	8	5
Other and Unspecified Valve Disease	15	2
Dilation of the Heart	3	3
Other or Unspecified Myocardial Disease	5	1
Disordered action of the Heart	10	1
Heart Disease (undefined)	28	2
83. Aneurysm	7	2
84. Arterio-Sclerosis	1	
85. Other Diseases of the Arteries	2	
86. Embolism and Thrombosis (not Cerebral)	1	
87. Diseases of the Veins	46	
88. Diseases of the Lymphatic System	114	
89. Hæmorrhage without Stated Cause	16	9
V. *Diseases of the Respiratory System—*		
91. Diseases of the Nasal Fossae and Annexa	4	
Diseases of the Accessory Nasal Sinuses	15	1
92. Laryngitis	3	
93. Acute Bronchitis	7	
Chronic Bronchitis	16	2
Bronchitis (not distinguished)	67	3
94. Broncho-pneumonia	100	30
95. Pneumonia:		
Lobar Pneumonia	96	22
Pneumonia (not defined)	56	22
96. Pleurisy:		
Empyema	18	
Other Pleurisy	49	
97. Congestion and Hæmorrhagic Infarct of Lung	1	
99. Asthma	13	1
101. Other Diseases of the Respiratory System	3	
VI. *Diseases of the Digestive System—*		
102. Diseases of the Teeth and Gums	30	
Ludwig's Angina	1	
Other Diseases	31	
103. Diseases of the Pharynx and Tonsils:		
Tonsilitis, Adenoid Vegetations	50	
Other Diseases	7	
105. Ulcer of the Stomach and Duodenum:		
Ulcer of the Stomach	20	3
Ulcer of the Duodenum	18	3
106. Other Diseases of the Stomach:		
Inflammation of the Stomach	63	
Other Diseases	31	
107. Diarrhœa and Enteritis:		
Ulceration of Intestines	1	1
Colitis	44	6
Other Diseases	143	30
108. Ankylostomiasis	15	
109. Diseases due to other Intestinal Parasites	15	6
110. Appendicitis	511	13
111. Hernia	165	12
112. Intestinal Obstruction	32	17
113. Other Diseases of the Intestines:		
Intestinal Stasis	58	
Other Diseases	78	1
116. Cirrhosis of the Liver (not returned as Alcoholic)	20	8
117. Biliary Calculi	11	1
118. Other Diseases of the Liver	64	5
119. Diseases of the Pancreas	2	2
120. Peritonitis without stated cause	27	11

	Cases.	Deaths.
VII. *Non-Venereal Diseases of Genito-urinary System—*		
122. Acute Nephritis (including unspecified under 10 years) ..	24	3
123. Chronic Nephritis (including unspecified under 10 years) ..	90	33
125. Other Diseases of the Kidney and Annexa	41	2
126. Calculi of the Urinary Passages	3	
127. Diseases of the Bladder—		
Cystitis	38	3
Other Diseases of the Bladder	12	1
128. Diseases of the Urethra, Urinary Abscess, etc.:		
Stricture of the Urethra	42	5
Other Diseases of the Urethra, etc.	49	1
129. Diseases of the Prostate	13	2
130. Non-Venereal Diseases of the Male Genital Organs ..	116	
131. Cysts and other Tumours of Ovary (not returned as malignant)	29	1
132. Salpingitis and Pelvic Abscess in females:		
Salpingitis	287	9
133. Pelvic Abscess	17	
Tumours of the Uterus not returned as malignant ..	142	7
134. Non-puerperal Uterine Haemorrhage	21	
136. Other Diseases of the Female Genital Organs—		
Other Diseases of the Uterus	176	
Diseases of other Female Genital Organs not included under other headings	38	2
137. Non-puerperal Diseases of the Breast	8	
VIII. *The Puerperal State—*		
138. Accidents of Pregnancy:		
Abortion	98	2
Ectopic Gestation	29	4
140. Other Accidents of Pregnancy	33	
Other Accidents of Childbirth	23	2
141. Puerperal Sepsis	3	2
143. Puerperal Albuminuria and Convulsions	6	2
IX. *Diseases of the Skin and Cellular Tissue—*		
146. Senile Gangrene	3	1
Other Gangrene	7	2
147. Carbuncle, Boil	24	
148. Cellulitis, Acute Abscess:		
Cellulitis	25	
Acute Abscess	48	
149. Other Diseases of the Skin and Annexa:		
Ulcer—Bedsore	120	
Eczema	6	
Other Diseases	116	
X. *Diseases of the Bones and Organs of Locomotion—*		
Diseases of the Bones:		
150. Acute Osteomyelitis and Periostitis	28	
Other Diseases of the Bones	14	
151. Diseases of the Joints	19	
152. Amputations	42	1
153. Other Diseases of the Organs of Locomotion	33	
XI. *Congenital Malformations—*		
154. Other Congenital Malformations	10	
XII. *Diseases of early Infancy—*		
155. Congenital Debility and Sclerema	24	19
156. Premature Birth	1	1
157. Injury at Birth	1	
158. Other Diseases	3	2
XIII. *Diseases of Old Age—*		
160. Senile Dementia	3	
Other Forms of Senile Decay	10	2
XIV. *External Causes—*		
171. Food Poisoning	5	
173. Other acute accidental poisoning (not by gas) ..	7	5
175. Accidental Burns (conflagration excepted)	90	
176. Accidental Mechanical Suffocation	1	1
165. Accidental Injury by firearms	5	1
166. Accidental Injury by piercing or cutting instruments ..	114	
167. Accidental Injury by fall	52	
168. Accidental Injury by other Forms of Crushing (road vehicles or railways, etc.)	158	
187. Hunger or Thirst	2	
191. Electricity (lightning excepted)	2	
186. Fractures	256	2
192. Other and Unstated Forms of Accidental Violence ..	69	4
XV. *Ill-defined Diseases—*		
202. Other Ill-defined Causes	341	15
	8,340	742

Death Rate 8.8%

Table VI.

	Cases.
1. *Operations upon Female Genital Organs*—	
Pan Hysterectomy	2
Total Hysterectomy	5
Sub-total Hysterectomy	91
Myomectomy	11
Salpingectomy	302
Oophorectomy	164
Ovarian Cyst	11
Broad Ligament Cyst	6
Draining Pyosalpinx	10
Uterine Suspension	10
Curettage	140
Dilation of Cervix	2
Amputation of Cervix	2
Ectopic Gestation	23
Retained Placenta	1
Perineorrhaphy	2
Colporrhaphy	1
Draining Pelvic Abscess	6
Therapeutic Abortion	1
Cæsarean Section	1
Haematocolpos—Draining of	1
2. *Operations on Hernia*—	
Radical Cure	119
Strangulated Hernia	9
Obstructed Hernia	2
Umbilical Hernia	5
Ventral Hernia	1
3. *Operations for Appendicitis*—	
Appendicectomy	527
Appendix Abscess	18
4. *Operations upon the Stomach and Intestines*—	
Perforation of Gastric Ulcer	1
Laparotomy for Volvulus	8
Gastro-enterostomy	6
Gastrostomy	1
Colostomy	3
Resection of Gut	2
Exploratory Laparotomy	13
Laparotomy for Tubercular Peritonitis	4
Laparotomy for Intussusception	2
5. *Operations on Kidneys and Bladder*—	
Nephrectomy	3
Supra Pubic Lithotomy	1
Supra Pubic Cystotomy	15
Cystoscopy	1
6. *Operations on the Penis and Urethra*—	
Amputations of Penis	5
Circumcisions	167
Dilating Urethral Stricture	67
Dilating Prepuce	6
7. *Operations on the Testicle and Scrotum*—	
Orchidectomy	6
Varicocele	2
Radical Cure for Hydrocele	5
8. *Operations on Rectum and Anus*—	
Hæmorrhoidectomy	35
Injections of Hæmorrhoids	6
Anal Fistulae	7
Dilating Rectral Stricture	27
9. *Amputations*—	
Legs	3
Toes	18
Arm	1
Fingers	20
10. *Operations on the Thorax*—	
Amputations of breast for Malignancy	7
Adenoma of Breast	4
Abscess of Breast	6
Empyema—Resection of Rib—	8
11. *Operations upon the Ear*—	
Radical Cure of Mastoid	7
Conservative Operation for Mastoid	1

	Cases.
12. *Operations on the Nose—*	
Removal of Adenoids	306
Tonsillectomy	653
Enucleation Tonsils	2
Nasal Polyp	41
13. *Tracheotomy*	1
14. *Operations on Tendons*—Suturing Tendons	21
15. *Operations on Antrum and Frontal Sinus*	15
16. *Ophthalmic Operations—*	
Extraction of Cataract	23
Needling Cataract	72
Enucleation of Eyeball	22
Iridectomy	8
Meibomian Cysts	33
Pterygium	58
Lachrymal Apparatus	15
17. *Operations on Infections of Bones—*	
Osteomyelitis	8
Sequestrotomy	7
18. *Dislocations*	2
19. *Fractures of Bones—*	
Plating Fractures	3
Wiring Fractures	9
Bone Graft	1
20. *Operations on Skull—*	
Trephining Skull	5
21. *Operations on Thyroid Gland—*	
Thyroidectomy	4
Excision of Thyroid Cysts	5
22. *Operations upon the Liver and Gall Bladder—*	
Cholecystectomy	1
Cholecystostomy	8
Draining Liver Abscess	1
23. *Excision of Glands—*	
Cervical	1
Axillary	1
Inguinal	13
24. *Incision of Abscess*	73
Suturing Wounds	18
Removal of foreign bodies (bullets, needles, etc.)	29
Examinations	40
Scraping Ulcers	24
Dental Extractions	21
Excision of Ganglion	10
Excision of Toe-nail	39
Excision of Lipoma	12
Excision of Epulis	3
Excision of Keloid	5
Breaking down Adhesions	12
Excision of Carbuncle	11
Excision of Bursae	4
Amputation of Supernumerary Digits	6
Sebaceous Cysts	19
Operation for Hare Lip	5
Operation for Club Foot	1
Excision of Fibroma	7
Excision of Bartholin Cyst	2
Ranulae	3
Repair of Vesico-vaginal Fistula	7
Repair of Recto-vaginal Fistula	1
Nerve Suture	1
Ligature of Arteries	2
Talma-Morrison Operation	3
Sigmoidoscopy	1
Splenectomy	3
Phrenicectomy	73
Operation for imperforate Hymen	2
	3,718

Table VII.—Return showing the work done at the Venereal Diseases Clinic at the Public Hospital, Kingston, during the year 1934.

No. of Salvarsan Injections.	No. of Bismuth Sal. Injections given.	No. of Gonococcic Vaccines given.	No. of Individuals treated with Salvarsan.	No. of Treatments given for Venereal Diseases.	No. of Admissions to V.D. Wards.		No. of Discharges from V.D. Wards.		No. of Cases dressed and irrigated.		No. of Operations performed.	No. of Prescriptions, Lotions, etc. dispensed.	
					Males.	Females.	Males	Females.	Males	Females.		Wards	O.Ps.
9,239	5,065	936	8,105	29,556	429	402	411	338	13,929	2,364	303	6,412	12,633

Table VIII.

No. of patients treated with tickets from authorized persons ..	2,162
No. of prescriptions for above	11,743
No. of patients treated without tickets	154,433
No. of prescriptions for above	64,514
Eye, Ear, Nose and Throat Clinic	10,382
Orthopaedic Clinic (June to December)	4,341
Total number of Out-patients treated for 1934 ..	171,318
Minor operations	6,272
Motor Car Cases	683
No. of Prescriptions for Constabulary	762

A. S. Westmorland,
Medical Superintendent, Public Hospital, Kingston.

Table IX.

Summary of work performed at the Dental Clinic attached to the Public Hospital, Kingston.

No. of patients attended	6,647
No. of Extractions	8,757
No. of Mouth Washes given (bottles) ..	140
No. of Minor Operations	5
Removal of Necrosed process	14
No. of Treatments of Teeth	27
No. of Cleanings	2

The patients consisted almost entirely of that class which, although grateful for the benefits received, would not have been able to offer payment to a private dental practitioner. I have been careful not to encourage abuses in the system of relief being afforded by the Government in this Department for the deserving poor, and have therefore frequently had to refer applicants who, from appearances were able to pay to some dentist in the city other than myself.

S. C. DePass,
Surgeon Dentist, Public Hospital, Kingston.

Table X.—*Radiology Department.*

No. of patients X-rayed from January 1st to December 31st	2,765
No. of Gastro-Intestinal Series	202
No. of Gall Bladders	56
No. of Urinary Systems	97
No. of Fractures	1,861
No. of Sinuses	105
Other Organs	444
No. of Patients from Out-patient Department ..	1,383
No. of Patients from Wards	1,048
No. of Private Patients	334

C. F. H. Parkin,
Radiologist, Public Hosptal, Kingston.

(B) *Report and Returns of the Visiting Surgeon, Jubilee Maternity Hospital.*

Admissions.—1,220 (including 70 re-admissions). Of these 300 were married and 920 single women.

Deliveries.—1,143. 1,065 were live births (67 premature), 70 dead and still-born and 9 miscarriages (3 were delivered in 1935 and 3 at the Public Hospital, Kingston—the mothers having been transferred for surgical treatment). 998 of the live births were at term.

Deaths.—9 Maternal. 6 of these were admitted moribund. Eclampsia accounted for 5, Haemorrhage, General Peritonitis, Nephritis and Lobar Pneumonia each contributed 1.

63 infants made up as follows:—

46 Deficient Vitality.
1 Purpura Hæmorrhagica.
6 Cerebral Hæmorrhage.
2 Umbilical Hæmorrhage.
2 Convulsions.
1 Hæmatemisis.
1 Hæmophilia.
3 Asphyxia.
1 Operative Delivery.

Forceps had to be applied to 5 cases and 3 others were transferred to the Public Hospital, Kingston, for surgical treatment.

There were 18 cases of twins. The maternal abnormalities were as under:—

575 cases of Albuminuria over 80% of which were discharged free of the condition.
23 cases of Eclampsia.
60 cases of Haemorrhages (Ante and Post-Partum).
12 cases Mal-presentations.
3 cases of Disproportions.
4 cases were mentally complicated.
11 cases of minor abnormalities.

850 cases contained a third foetal membrane, partial or complete. This being a very interesting condition which had never been observed elsewhere, as far as one is aware, specimens have been submitted to the Pathologist for his kind investigation and report.

31 Pupil Nurses were admitted for training as Midwives. Of these 1 resigned, 1 went away on sick leave, 12 satisfied the Examiners under the Midwifery Law and 2 failed to do so. 15 have not yet completed the course.

The Prenatal Clinic established in July has not been in existence long enough to enable me to offer any other comment than that it is being well attended by parties availing themselves of this institution. As time goes on there is reason to believe the beneficence of this institution will be disclosed, not only in a decrease of the incidence of Albuminuria specially as well as other conditions bearing on pregnancy, but in its educational results also.

In co-operation with the Pathological Department, specimens of placental blood are being examined with a view to compiling statistics of the percentage of Syphilis as far as this Institution is concerned. A report will be made accordingly in due course.

Lastly I am to record the gratitude of the staff to His Excellency the Governor and Lady Denham, Mrs. Hallinan and others who kindly visited the Institution on Christmas Day and their appreciation of the kindly manner in which Lady Denham distributed the presents to the patients.

E. V. W. MELLAD,
Visiting Surgeon, Jubilee Maternity Hospital.

(C) *Report and Returns of the Medical Superintendent, Lunatic Asylum.*

On the 31st December, 1934, there were 1,920 patients under treatment and care in the Institution, of this number 954 were males and 966 females. The daily average number during the year was 1,885 and the highest number requiring to be accommodated on any one day was 1,924. The total number of patients who received treatment during the year was 2,407.

In view of the fact that during 1933, vide Report for that year, the daily average number of patients had increased by 47 and that during 1934 by a further 47, it is obvious that this Institution which is built to accommodate 1,750 patients is becoming more and more overcrowded, and this overcrowding is not confined only to sleeping accommodation, but that Latrine and Airing Courts are also involved; further and lastly a very important point arises, namely, that the female and male nursing staff is inadequate in as far as numbers go, to properly and adequately supervise and attend to the patients. This persistent annual increase in the number of insane patients is, I submit, a very grave problem.

ADMISSIONS AND DISCHARGES.

During the year 526 patients were admitted—males 258, females 268, whilst 487 were discharged or died, males 230, females 257. Of the discharges 133 were sent away as "recovered," 113 "relieved," and 3 removed by relatives against the advice of the Medical Superintendent as discharged "not improved." 5 male patients escaped and were all recaptured. 3 patients were sent to the Public Hospital, Kingston for major surgical operations, 2 returned and the other is still in the hospital. One infant was born and eventually discharged to the care of the Poor Law Authorities, Kingston.

The percentage of cases discharged "recovered" as based on the number of admissions during the year was 25.28, whilst that of cases discharged "relieved" similarly based was 21.48.

All cases discharged "relieved" except Epileptics, the latter being always considered as relieved had been in the Asylum before.

DEATH RATE.

229 patients died, males 105, females 124, a decrease of 53 as compared with the death rate for 1933; the percentage of deaths as compared with the daily average number of patients under treatment is therefore 12.14.

The principal causes of death were among females, Pulmonary and other forms of Tuberculosis, Cardiac Disease, Chronic Pellagra has also claimed some victims. Among males Dementia Paralytica has accounted for 33 deaths, the next most prevalent cause being Pulmonary Tuberculosis 20.

Other causes are shown in Statistical Tables.

From the foregoing it is obvious that in as far as males are concerned Syphilis is or was prevalent in the Colony, and that Pulmonary Tuberculosis is rife among both sexes, both as causes of insanity. There is also no doubt that Pellagra is a cause of Mental Disorder.

PRINCIPAL TYPES OF MENTAL DISORDERS ADMITTED.

Among females the principal type of insanity is the Manic Depressive, the acutely maniacal sub-group predominating, Dementia Præcox also is predominant; several cases of true exhaustion Psychosis have been admitted.

Among males the Manic Depressive group the vast majority being Maniacal; Melancholia is not common among males. Dementia Paralytica appears to be on the increase in males, 45 cases being admitted during the year as against 37 in 1933.

PRINCIPAL CAUSES OF INSANITY.

The principal causes of insanity remain as in past years, Heredity, Consanguinity, Syphilis and Exhaustion from poor nourishment and unhygienic surroundings. Malaria, Pellagra and Ankylostomiasis are in general responsible for several cases of Exhaustion Psychosis.

There is again evidence of proof that the use of Ganja is a cause of insanity, five admissions being traced to this "weed" as a cause.

SCIENTIFIC.

Autopsies were conducted on the bodies of 104 males and 124 females; again the value of Post Mortem Examinations cannot be too highly recommended. With regard to Tuberculosis as a cause of death the Asylum is glad to have assisted the Rockefeller Foundation and to have derived from their officers considerable useful instruction. In return we have been able to demonstrate the brain lesions of Dementia Paralytica and other conditions relative to Syphilis of the Central Nervous System. Out of the autopsies 21 males were found to be suffering from Tuberculosis and 26 females.

Wassermann and Kahn reactions both of blood and in many cases of Cerebro-Spinal Fluid have been carried out in the cases of 153 males and 263 females. 64 reactions were positive in males, 61 being newly admitted patients, 3 old inhabitants.

Out of 201 newly admitted patients examined 34 were positive Syphilis, whilst out of 59 old inhabitants 5 proved positive.

It must be pointed out that if possible every case is thus examined, but that in some cases who are resistive and very troublesome it is impossible to get the blood or cerebro-spinal fluid.

The Asylum must thank the Yaws Commission and the Government Laboratory for their cheerful and most helpful assistance in this branch of Mental Hospital work.

It is the practice of the Asylum to give prophylactic treatment against Typhoid Fever and there is no doubt that this procedure is effective. Every new admission is, if possible, inoculated and all patients who have been in the Asylum for over two years inoculated.

The result is that though cases of Typhoid Fever do occur the illness is of a very mild type.

In the Male Division 710 patients were inoculated and only one case of real Enteric Fever occurred. In the Female Division 521 patients inoculated 39 cases of Typhoid Fever occurred, but there is evidence to show that the Widal Reactions in most of these cases were misleading owing to their having been previously inoculated and the usual clinical signs being absent.

DYSENTERY A AND B AND ANKYLOSTOMIASIS.

Males.—Stools sent for examination 111, of these 16 were positive Amoebic Dysentery, 4 were positive Bacilliary Dysentery and 5 positive Ankylostomiasis. In all suspected cases of the foregoing a stool is at once sent for examination.

Females.—Results 50 stools examined, 24 positive the majority 16 being Amoebic, 1 Bacilliary Dysentery, the others Clinical Dysentery, but no organism found in stools. Ankylostomiasis 60 stools examined positive 18.

MALARIA.

All new admissions are now examined for Malaria as there is no doubt that Malaria does incite insanity in those predisposed to mental disorder.

Results are: Males out of new admissions , 4 positive; old inhabitants 2 positive. Nature of parasite P. Falciparum. Females, new admissions 10, old inhabitants 1. Among females P. Vivax was the only parasite found.

With regard to some of the prevalent physical disorders the following reports may be of value.

Dysentery (*Amoebic*)—Yatren has proved of value but it must be exhibited both orally and per rectum; oral administration often has little results.

Ankylostomiasis.—Chenopodium has proved to be the most efficacious.

Neuro Syphilis.—A combined treatment of Potassium Iodid and Mercury followed by one or other of the arsenical products Neo-arsphenamine being from results the best, though Tryparsamide is of value.

Pellagra.—Dietetic treatment, diet containing a predominance of fresh pulses combined with ½ lb. tomatoes daily clears up the condition unless very advanced.

The use of brown rice is certainly of value in checking the incidence of disorders due to vitamin deficiency.

Report from the Officers of the Rockefeller Foundation in connection with Tuberculosis.

The routine intracutaneous tuberculin tests were continued as usual during the year on the newly admitted patients. 363 patients received tuberculin tests. Of these 302 reacted positively to tuberculin. 61 patients were negative to tuberculin. Of this group 30 received intracutaneous vaccinations with heat killed tubercle bacilli. The other 31 are controls for the above group.

Besides continuing the custom of taking an X-ray of the chest of every new admission, we have attempted to re-X-ray as many inmates as possible at six months intervals. During the year 725 X-rays were taken on new admissions, suspected cases and repeated examinations of the vaccinated and control groups. 28 cases of Pulmonary Tuberculosis were found; 7 with latent tuberculous lesions; 1 with a massive pleural effusion and 28 cases are regarded as suspicious and are being followed regularly.

Autopsies have been done on as many cases as possible who have died in the Institution. 150 pairs of lungs were obtained for X-ray study and careful post-mortem dissection.

New Works and Repairs.

No new works of any magnitude have been carried out and accommodation not increased.

Requests for alteration of existing wards in the Male Division in order to increase accommodation and one new ward for the Female Division have been submitted to the Government by the Board of Visitors.

Three verandahs in the Female Division have had roofs re-conditioned and it is hoped work on a fourth will be completed before the end of the financial year.

The dining shelter at "D" Ward Female Division has been renovated, the roof being quite rotten. Two obsolete latrines one in the Male Division and the other in the Female Division have been modernised.

The old quarters occupied by the Fourth Assistant Medical Officer have been demolished, and out of any good material found a new lock-up store was constructed, this entirely by the Asylum Staff assisted by patients. All remaining useful material has been used up for patching up old outbuildings at Officers' Quarters and other necessary and urgent work.

Much of the iron work in both Divisions has been repainted, this work also being carried out mostly by the Asylum artisans and patients, assisted by the Public Works Department.

The quarters occupied by the First Assistant Medical Officer has been reconditioned and repainted by the Public Works Department.

The steel framework of the roofs covering the main entrance and the dining hall at the Male Division will have to be painted during 1935 otherwise the steel will corrode and a very large expense incurred in order to renovate these structures.

The roof of the Porter's Lodge is in very bad condition and in bad weather cannot keep out rain, there is reason for expecting that repairs will be effected during the present financial year.

Water Supply and Sanitation.

The water pressure is very low at the Male Division, this it is suggested is because the main supply consists of a three inch pipe.

In case of fire the existing condition would be the cause of a catastrophe.

It is also difficult to arrange for proper bathing of patients and cleaning of wards.

At the Female Division conditions are better, though in the mornings pressure is very poor for bathing and sanitary purposes.

The Sewerage System is also unsatisfactory owing to the main sewer connecting with the city sewers being only six inch bore.

Farm and Grounds.

The institution of ward gardens and gardens outside the wards, all labour being carried out by patients and staff, has again proved a success and a saving. In 1933, approximately seven tons of vegetables and fruits were produced; in 1934 at least twenty-four tons was the result of the progress made, all workers are to be congratulated. Taking an average of the price of types of vegetables as supplied under contract, the value of vegetables supplied from the Asylum gardens was approximately £320.

Sheep have done well on the whole and the Poultry Farm has paid for itself, eggs 176 dozen, chickens for special cases, 46lbs.

Roads have been repaired, all work on same being carried out by patients.

Several old fences have been repaired and re-wired, work being done by patients and attendants.

Lastly under this heading a considerable amount of firewood has been cut, old trees, thinning out of trees, and general cleaning up being the source of supply.

The gross value derived from farm and gardening operations including manure and divi divi can be calculated as being £422 19s. 8d. for the year against £216 6s. 10d. for 1933. Of the £422 19s. 8d. the sum of £87 13s. 10d. goes to General Revenue, while £317 5s. 9d. represents the value of farm products used for dietary purposes, thereby effecting a saving on Item 21. The balance, viz., £18 0s. 1d. goes to Patients' Fund in accordance with Regulations governing that fund.

The following sums paid to the Asylum for work done were also collected:—

(a) For Laundry Work for the Public Hospital, Kingston ..	£118	10	5
(b) For making straw brooms for the Public Hospital, Kingston	1	9	6
(c) For making Floor Polish for the Public Hospital, Kingston	3	18	0

which amount was refunded to Item 30—Washing and Sanitary Arrangements.

£53 17s. 7d. of the total sum of £118 10s. 5d. received for washing done for the Public Hospital, Kingston, was also lodged to the credit of Miscellaneous Revenue, and the balance credited to the Patients' Fund.

Asylum continues to make straw brooms, brass polish and Fly Killer for itself, also all clothing and bedding, except blankets, for non-contributing patients, and all table (except spoons) and sanitary utensils for the same class.

The reason why the Asylum has again saved on expenditure to the Government is that the Workshops, Laundry and Sewing Room remain efficient. The amount of repair work especially in respect of clothing and bedding is saving much money. The Matron for her interest in the matter of repairs must be commended, while the Chief Artisan and his staff have done excellent work in respect of minor repairs to buildings, carts, drains, etc. The Tailor's Shop has proved more than its worth under Attendant Ettricks. All artisans have put their backs into the work required and have done well; without good artisans who can do, teach and encourage patients to work no asylum could carry on except at enormous expense to the governing body.

BOARD OF VISITORS.

The Board of Visitors met on four occasions during the year and as a result of their meetings and individual visits by members the question of overcrowding has again been strongly represented to the Government.

The death of the Very Reverend Father Charles F. Arnold, S.J., a member of the Board, is much regretted.

VISITS.

His Excellency the Governor and Lady Denham attended the Annual Sports held on the 29th November; Lady Denham graciously presented the prizes. His Excellency and Lady Denham again visited the Hospital on Xmas Day and made a tour of several of the wards, this much to the delight of the patients wherever they went.

Sir Arthur Jelf, Honourable Colonial Secretary, has officially visited the Asylum in connection with the question of overcrowding. Sir Arthur Jelf also took a keen interest in the Annual Sports and acted as a Judge on that day.

The Superintending Medical Officer has paid several visits which were of value; such visits are much appreciated.

CHURCH SERVICES.

Services for both Church of England and Roman Catholic patients have been held as usual. Patients belonging to other denominations would appreciate visits from Pastors of their separate Churches. It would also be of value if Jewish patients were more frequently visited by a Rabbi.

We miss our old friend, Father Semmes, but we welcome Father Wennerberg, who seems to have a good idea of what is required of a Priest in a Mental Hospital, no matter what his denomination.

On an average 126 females and 120 male patients attend Church of England Services on Sundays, and 12 females and 15 males Roman Catholic Services which are held monthly.

AMUSEMENT OF PATIENTS.

The various forms of amusements provided for the patients are: cricket, football, bowls, radiogramaphone, concerts, cards, draughts, dominoes, table tennis in the wards. I have again to thank all those who have kindly supplied books and periodicals which are much appreciated, and Mr. P. Harris of Messrs. R. S. Gamble and Son for supplying oranges.

EMPLOYMENT OF PATIENTS.

Usefully employed males	365
Gardens and Grounds	125
Trades	47
Household work, Kitchens, Wards and Sanitation	193
Usefully employed females	511
Trades, Sewing Room in particular ..	176
Gardening	98
Domestic Work, including Laundry ..	237

STAFF.

Dr. U. N. Murray and Miss H. J. Tyler, Matron, were on vacation leave during the year, also Mr. Robinson, Dispenser, of the Office Staff, Mr. R. R. Wynter and Mr. V. A. Isaacs also had vacation.

It is with great regret that I have to record that since going on leave Mr. Wynter has become dangerously ill.

The Venerable Archdeacon J. L. Ramson, M.A., Chaplain, was also on leave, his duties being carried on by the Reverend E. Bardowell, B.A.

Dr. H. H. James resigned from the Service, his place as Fourth Assistant Medical Officer being filled by Dr. R. O. Cooke. Dr. Cooke is a most capable officer and very keen on his work; he also takes a keen interest in all games and amusements, this being a great asset in an Assistant Medical Officer.

Mr. W. S. Grizzle was appointed Storekeeper in place of Miss B. McFarlane, the appointment being on three years probation.

Miss Tyler, Matron, has again proved her merit, in bad weather or under any difficult circumstances she never spares herself.

My thanks are due to all Officers for taking a keen interest in the teaching of the Subordinate Staff, and to the whole staff for their loyal support in the working of this Mental Hospital and endeavouring to turn it into a modern institution.

Mr. Wynter and Mr. Isaacs have been real pillars of strength in the Office, but all in this Department have given of their best, often working overtime. I cannot in respect of the Office omit the name of Mr. David Sampson, who has done yeoman service.

Those members of the Staff who joined the Staff Amusement Club had a most enjoyable outing to Port Maria, when we went there at the invitation of the Middlesex C.C.; unfortunately the return match was spoiled by rain. I should like to see a larger membership.

The Thrift Club has again proved its value, the return for shares taken up being 4% per share.

The usual courses of training for nurses and attendants have been held, but unfortunately the Annual Examination could not be held before December 31st, this owing to stress of my own administrative duties.

The following members of the Staff left the service:—

Males—
- 2 retired on account of ill-health.

Females—
- 3 retired on account of ill-health.
- 1 absent without leave and not re-engaged.
- 1 absconded.
- 1 resigned without giving reason.
- 5 dismissed for either gross negligence when on duty or found unsuitable before probationary period was completed.

EXPENDITURE FOR THE CALENDAR YEAR, 1934.

It is anticipated that approximately £1,000 will be saved during the current financial year, possibly a little over this amount. Every economy is being effected without interfering with efficiency.

The usual Statutory Statistical Tables follow.

JAMAICA LUNATIC ASYLUM.

Population Return, 1934.

	Males.	Females.	Total.	Males.	Females.	Total.
Remaining 1st January, 1934	..	..	..	918	955	1,873
Admitted during 1934	258	268	526	..	..	..
Born 1934	1	..	1	..	..	..
Captured during 1934	5	..	5	..	..	..
Returned from Public Hospital	2	..	2	266	268	534
Total under care 1934	..	..	..	1,184	1,223	2,407
Discharged—recovered	65	68	133	..	..	..
" relieved	49	64	113	..	..	.
" not improved	2	1	3	—	..	..
Escaped	5	..	5	..	..	..
Infants died	..	..	..	..	..	..
Infants discharged	1	..	1	..	..	..
Patients died	105	124	229	..	..	..
Sent to Public Hospital for treatment	3	..	3	..	..	..
Total discharged and died	..	..	..	230	257	487
Remaining 31st December, 1934.	..	..	..	954	966	1,920

R. W. DALE HEWSON,
Medical Superintendent.

Table I.—Showing the actual Admissions, Re-admissions, Discharges and Deaths during the Calendar Year ended 31st December, 1934.

	Males.	Females.	Total.	Males.	Females.	Total.
In Asylum, 1st January, 1934	..	..	..	918	955	1,873
Cases admitted—						
First admissions ..	186	175	361	..	..	..
Not first admissions ..	72	93	165	..	..	..
Captured ..	5	..	5	..	..	..
Returned from Public Hospital	2	..	2	..	..	..
Born ..	1	..	1		..	..
Total cases admitted during the year	..	..	..	266	268	534
Total cases under care during the year	..	..	..	1,184	1,223	2,407
Cases discharged—						
Recovered ..	65	68	133		..	..
Relieved ..	49	64	113	..	..	..
Not improved ..	2	1	3	..	..	..
Escaped ..	5	..	5	..	..	..
Died ..	105	124	229	..	..	..
Sent to Public Hospital for surgical treatment	3	..	3	..	..	..
Infants died ..	..	..	..	..	..	..
Infants discharged	1	..	1	..	..	..
Total discharged and died during year	..	..	..	230	257	487
Remaining in Asylum, 31st December, 1934	..	..	..	954	966	1,920
Average number resident during the year	..	..	..	927	958	1,885

Table Ia.—Showing the number of previous attacks among those admitted during the Calendar Year, 1934, distinguishing those attacks that have been treated to recovery and discharged.

Number of previous attacks.	Having had previous Attacks.					
	All Attacks.			Attacks followed by Discharge or Recovery.		
	Males.	Females.	Total.	Males.	Females.	Total.
Have had 1 previous attack ..	54	52	106	28	25	53
Have had 2 previous attacks ..	11	14	25	6	8	14
Have had 3 previous attacks ..	4	6	10	1	6	7
Have had 4 previous attacks ..	6	6	12	1	1	2
Have had more than 5 attacks ..	4	12	16	2	1	3
Unknown . ..	..	3	3	..	1	1
	79	93	172	38	42	80

Table II.—Showing the Causes of Deaths among Male Patients during the Calendar Year, 1934, with the ages at Death.

——	Under 20	20 and under 30	30 and under 40	40 and under 50	50 and under 60	60 and under 70	70 and over	Total.
	M.	M.	M.	M.	M.	M.	M.	M.
Chronic Brain Disease ..	..	..	4	5	1	1	..	11
Cerebral Hæmorrhage ..	..	..	..	..	..	..	..	..
Maniacal Exhaustion ..	..	..	1	..	..	1	..	2
Status Epilepticus ..	..	1	..	1	..	..	..	2
General Paralysis ..	..	3	9	12	5	3	1	33
Dysentery ..	..	2	4	2	2	2	..	12
Intestinal Obstruction ..	..	..	..	..	..	..	..	..
Chronic Colitis ..	..	..	..	..	..	..	..	..
Pellagra	..	1	..	1	..	..	..	2
Syphilis	..	..	1	..	..	..	..	1
Pulmonary Tuberculosis ..	..	5	6	7	1	1	..	20
General Tuberculosis ..	..	2	..	..	..	..	..	2
Malignant Malaria ..	..	..	..	1	..	..	..	1
Chronic Heart Disease ..	..	..	..	..	..	..	..	..
Diseases of the Urinary System ..	..	..	..	..	2	..	..	2
Diseases of the Circulatory System ..	..	..	..	1	..	..	..	1
Cancer of Stomach ..	..	..	..	..	..	..	..	..
Pneumonia ..	1	..	2	2	..	..	..	5
Aortic Incompetency ..	..	..	..	..	..	1	..	1
Senile Decay ..	..	..	..	..	..	3	3	6
Pleurisy ..	..	..	1	..	..	..	..	1
Chronic Bronchitis ..	..	..	..	..	..	..	..	..
Pyaemic Abscess ..	..	..	..	..	1	..	..	1
Meningitis ..	..	..	1	..	..	..	..	1
Malignant Disease Pancreas ..	..	..	..	..	..	1	..	1
								105

Table II.—Showing the Causes of Deaths among Female Patients during the Calendar Year, 1934, with the ages at Death.

—	Under 20	20 and under 30	30 and under 40	40 and under 50	50 and under 60	60 and under 70	70 and over.	Total.
	F.	F.	F.	F.	F.	F.	F.	F.
Chronic Brain Disease ..	1	2	1	4	2	..	2	12
Cerebral Haemorrhage ..	..	..	1	1	1	1	2	6
Maniacal Exhaustion ..	..	..	2	..	..	..	..	2
Cerebral Abscess ..	..	..	1	..	..	..	..	1
Encephalitis ..	..	..	1	..	..	..	..	1
Gen. Paralysis of the Insane	..	..	..	1	..	..	..	1
Dysentery ..	..	1	1	..	2	2	..	6
Megacolon ..	..	..	..	1	..	..	..	1
Pellagra ..	1	1	..	1	..	2	..	5
Pulmonary Tuberculosis ..	1	9	3	5	..	3	..	21
Tuberculosis, other forms ..	..	1	2	2	..	..	..	5
Syphilis ..	..	..	3	1	1	..	..	5
Pneumonia ..	..	3	..	3	2	1	..	9
Diseases of the Circulatory	..	..	..	..	..	..	..	..
System ..	..	2	..	5	1	2	1	11
Diseases of the Respiratory System ..	..	..	1	2	..	..	..	3
Disease of the Urinary System	..	1	2	..	4	1	..	8
Tumour of Brain ..	..	..	..	..	..	..	..	..
Cirrhosis of Liver ..	..	..	..	..	..	..	..	..
Hepatic Abscess ..	..	..	..	..	..	1	..	1
Meningitis ..	..	..	2	..	..	..	..	2
Senile Decay ..	..	..	..	..	1	5	2	8
Septicæmia ..	1	..	..	1	..	1	..	3
Peritonitis ..	..	..	..	1	..	1	..	2
Pancreatitis ..	..	..	..	..	1	..	..	1
Asphyxia ..	..	..	1	..	..	..	..	1
Intestinal Obstruction ..	..	..	1	1	..	..	1	3
Cancer of the Stomach ..	..	..	..	..	..	..	..	..
Acute Cerebritis ..	..	1	..	..	..	..	..	1
Abscess of Lung ..	..	..	..	..	..	..	..	..
Carcinoma of Cervix ..	..	1	..	..	..	1	..	2
Chronic Ulcerative Colitis ..	..	1	1	..	..	..	..	2
External Hydrocephabus ..	..	..	1	..	..	..	..	1
								124

Table III.—Showing the duration of the Disorder on Admission in the Admissions, Discharges and Deaths during the Calendar Year ended 31st December, 1934.

Class.	Admission.			Discharges. Recovered.			Discharges. Relieved or otherwise.			Deaths.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
First Class—First attack, and within 3 months on admission	105	145	250	23	40	63	14	19	33	38	66	104
Second Class—First attack, above 3 and within 12 months on admission	49	3	52	10	20	30	6	9	15	22	24	46
Third Class—Not first attack, and within 12 months, etc.	34	103	137	13	7	20	5	17	22	15	23	38
Fourth Class—First attack or not, but of more than 12 months on admission ..	29	15	44	5	..	5	12	6	18	17	4	21
Fifth Class—Congenital	4	..	4	..	..	..	..	13	13	..	2	2
Unknown	37	2	39	14	1	15	12	1	13	13	5	18
Total ..	258	268	526	65	68	133	49	65	114	105	124	229

Table IV.—Showing the probable Causes of Insanity in the Patients admitted during the Calendar Year ended 31st December, 1934.

Cause of Insanity.	Number of instances in which each Cause was assigned. Number of Cases. Admissions—Males, 258, Females, 268—Total 526.											
	As predisposing Cause.			As exciting Cause.			As predisposing or exciting where these could not be distinguished.			Grand Total.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Moral—												
Domestic trouble (including loss of relatives and friends)	1	..	1	..	..	..	..	..	..	1	..	1
Adverse circumstances (including business anxieties and pecuniary difficulties) ..	2	..	2	..	..	..	..	..	..	2	..	2
Mental anxiety and worry (not including under above two heads) and overwork ..	..	..	..	..	..	..	..	..	..	..	..	..
Religious excitement	13	10	23	..	..	..	..	..	..	13	10	23
Love affairs (including seduction) ..	1	..	1	..	..	..	..	..	..	1	..	1
Physical—												
Intemperance in drink	4	..	4	..	..	..	..	..	..	4	..	4
Accident or Injury	2	..	2	..	..	..	..	..	..	2	..	2
Traumatism	5	..	5	..	..	..	..	..	..	5	..	5
Other bodily disease	..	..	..	..	..	..	..	..	..	..	..	..
Previous attacks	79	57	136	..	..	..	..	..	..	79	57	136
Heredity influence	43	60	103	..	..	..	..	..	..	43	60	103
Adolescence	1	..	1	..	..	..	..	..	..	1	..	1
Epilepsy	..	..	..	10	10	20	..	..	..	10	10	20
Puerperal	..	4	4	..	..	..	..	..	..	..	4	4
Syphilis	37	..	37	..	14	14	..	..	..	37	14	51
Not known	..	..	..	..	..	..	39	97	136	39	97	136
Senility	6	..	6	..	..	..	..	..	..	6	..	6
Menopause	..	12	12	..	..	..	..	..	..	..	12	12
Ganja Smoking	5	..	5	..	..	..	..	..	..	5	..	5
Puberty	..	..	..	..	..	..	..	..	..	..	..	..
Tubercular Disease	..	..	..	..	..	..	..	2	2	..	2	2
Venereal Disease	..	..	..	..	..	..	..	..	..	..	..	..
Fevers	2	..	2	..	..	..	..	..	..	2	..	2
Congenital defect ascertained	8	2	10	..	..	..	..	..	..	8	2	10
										258	268	526

Table V.—Showing the form of Mental Disorders in the Admissions, Recoveries and Deaths during the year and the form of Mental Disorders of the Inmates on 31st December, 1934.

Form of Mental Disorders.	Admissions.			Recoveries.			Deaths.			Remaining in Asylum.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
I. Congenital or Infantile Mental Deficiency	4	2	6	..	..	..	1	2	3	12	8	20
With Epilepsy	..	2	2	..	..	..	..	..	..	..	..	..
II. Insanity occurring later in life—												
Insanity with Epilepsy	16	8	24	..	1	1	..	..	..	101	29	130
General Paralysis of the Insane	28	2	30	..	..	..	34	1	35	45	1	46
Insanity with the grosser brain lesions	9	..	9	..	..	..	..	..	..	..	..	..
Acute Delirium (Acute Delirous Mania)	..	..	..	..	..	..	..	..	..	..	..	..
Confusional Insanity	20	11	31	18	15	33	3	3	6	31	..	31
Stupor	..	..	..	..	..	..	..	..	..	..	..	..
Primary Dementia	..	..	..	..	..	..	..	..	..	4	..	4
Mania—												
Recent	80	60	140	48	24	72	38	29	67	270	293	563
Chronic	5	6	11	..	..	..	2	51	53	305	207	512
Recurrent	51	32	83	26	8	34	11	3	14	48	132	180
Depressive Psychosis	..	..	..	..	..	..	..	..	..	..	..	..
Melancholia—												
Recent	4	20	24	2	4	6	1	6	7	22	10	32
Chronic	..	1	1	..	..	..	..	..	..	..	2	2
Recurrent	..	..	..	..	..	..	..	..	..	18	..	18
Alternating Insanity	12	34	46	8	16	24	1	3	4	6	48	54
Delusional Insanity	14	20	34	10	..	10	3	2	5	13	60	73
Systematised	..	..	..	..	..	..	..	..	..	..	..	..
Non-systematised	..	..	..	..	..	..	..	..	..	..	..	..
Volitional Insanity	..	..	..	..	..	..	..	..	..	..	..	..
Impulse	..	..	..	..	..	..	..	..	..	..	..	..
Obsession	..	..	..	..	..	..	..	..	..	..	..	..
Doubt	..	..	..	..	..	..	..	..	..	..	..	..
Moral Insanity	..	..	..	..	..	..	..	..	..	..	..	..
Dementia	..	..	..	..	..	..	..	..	..	..	..	..
Senile	1	10	11	..	..	..	..	15	15	65	86	151
Secondary or Terminal	4	..	4	2	..	2	3	5	8	6	..	6
Præcox	10	60	70	2	..	2	8	4	12	8	89	97
Neurosis—												
Neurasthenia	..	..	..	..	..	..	..	..	..	..	..	..
Anxiety Neurosis	..	..	..	..	..	..	..	..	..	..	..	..
Psychoneurosis—												
Hysteria	..	..	..	..	..	..	..	..	..	..	1	1
Psychasthenia	..	..	..	..	..	..	..	..	..	..	..	..
Total	258	268	526	116	68	184	105	124	229	954	966	1920

FINANCIAL STATEMENT.

Table VI.—Cost of Maintenance for the Calendar Year, 1934.

	£	s.	d.
Salaries	5,426	5	4
Wages	17,253	0	8
Religious Services	60	0	0
Dietary	13,489	12	8
Uniform for Nurses and Servants ..	494	18	6
Furniture and Utensils ..	422	4	11
Clothing and Bedding	1,137	15	5
Drugs and Medical Appliances ..	308	16	11
Funeral Expenses	113	7	5
Travelling Expenses of Discharged Lunatics	88	6	10
Farm and Grounds and Repairs ..	469	1	8
Rent of Telephones	125	5	3
Washing and Sanitary Arrangements	420	1	5
Fuel and Lighting and Power ..	982	19	11
Water Rates	503	0	0
Miscellaneous	246	3	6
Stationery	..		
	£41,541	0	5

LESS REIMBURSEMENTS.

	£	s.	d.	£	s.	d.
Contributing Patients ..	2,968	14	8			
Miscellaneous Revenue ..	141	11	5	3,110	6	1
Net cost to General Revenue				£38,430	14	4

R. W. DALE HEWSON,
Medical Superintendent Lunatic Asylum.

(D) Return of Diseases and Deaths in Public General Hospitals, (outside Kingston) during 1934.

Disease.	Cases Treated.	Deaths.	Out-Patients.
Chicken Pox	33	..	47
Diphtheria	4	1	5
Epidemic Diarrhœa	6	..	160
Dysentery—			
Amoebic	48	6	19
Bacillary	16	4	18
Unclassified	5	..	1
Erysipelas	11	1	5
Enteric Fevers	596	145	99
Gonococcal Infections	1,188	1	4,007
Influenza	63	..	1,097
Leprosy	3	..	10
Malaria—			
Tertian ..	3,789	84	14,108
Quartan	..	..	..
Sub-Tertian	216	35	180
Chronic	72	2	73
Blackwater	11	3	2
Measles	10	..	15
Poliomyelitis	2	..	2
Encephalitis Lethargica ..	..	..	..
Cerebro-Spinal Meningitis ..	7	2	..
Mumps	36	..	47
Scarlet Fever	12	..	12
Soft Chancre	69	..	375
Syphilis—			
Primary	244	3	1,906
Secondary	19	..	1,422
Tertiary	703	9	3,658
Congenital	14	1	134
Unclassified	33	12	425
Septicaemia	28	9	6
Tetanus	37	17	6
Mycosis	2	..	1

	Cases Treated.	Deaths.	Out-Patients.
Tuberculosis—			
Pulmonary	178	38	317
Other Forms	124	8	81
Whooping Cough	18	..	66
Yaws	219	..	5,972
Alcoholism	5	2	4
Anaemias	51	5	620
Diabetes	69	5	82
Pellagra	6	1	8
Scurvy	..	..	..
Rheumatism—			
Acute	281	..	1,436
Chronic	55	1	2,449
Rickets	6	..	5
Tumours—			
Malignant	202	32	122
Non-Malignant	121	2	102
Diseases of the Ductless Glands	58	3	146
“ Nervous System	390	44	1,787
“ Eye	414	..	1,440
“ Ear	69	3	273
“ Circulatory System	488	75	1,221
“ Lymphatic System	189	4	570
“ Respiratory System	858	124	2,669
“ Digestive System	3,038	131	13,960
“ Spleen	3	2	55
“ Breast	93	..	185
Parasites	281	11	2,582
Diseases of the Genito-Urinary System (Non-Venereal)	2,300	121	3,765
“ Puerperal State	676	57	408
“ Skin and Cellular Tissues	1,451	13	10,872
“ Bones and Organs of Locomotion	421	4	1,262
Malformations	15	1	5
Diseases of Infancy	63	12	276
Diseases of Old Age	3	..	57
Poisons	53	6	47
Diseases produced by external causes	3,366	63	13,110
Ill-defined Diseases	83	7	131
Other General Diseases	22	..	101
No Disease	112	..	918
Malingering	9	..	9
Total	23,067	1,110	94,960

Death Rate 4.8%

(E) Return of Surgical Operations, Public General Hospitals (excluding Kingston), 1934.

	Number.
Operations upon Female Genital Organs—	
Salpingectomy	131
Draining Pyosalpinx	7
Oophorectomy	17
Ovariotomy	21
Ovarian Cysts	27
Salpingo-oophorectomy	19
Broad Ligament Cysts	4
Cyst	1
Myomectomy	11
Sub-total Hysterectomy	41
Total Hysterectomy	38
Pan Hysterectomy	2
Caesarian Section	2
Uterine Suspension	10
Curettage	327
Dilation of Cervix	17
Extra Uterine Gestation	24
Repair of Vagina	10
Excision of Hymen	1
Excision of Labial Growths	11
Hæmatocolpos	1
Induction of Abortion (ligation of tubes)	2
Perineorrhaphy	11
Draining Pelvic Abscess	2
Cervical Polypus	3
Amputation of Cervix	1

	Number.
Parturition—	
Instrumental Delivery	68
Caesarian Section	8
Craniotomy	2
Induction of Labour	21
Removal of Placenta and Membranes	2
Version for Placenta Prævia	1
Manual removal Placenta	1
Imcomplete Abortion	2
Repair of Vesico-vaginal Fistula	2
Replacing Uterus	1
Operations on Herniæ—	
Epigastric Hernia	1
Radical Cure—Inguinal	111
Femoral	2
Strangulated Hernia	26
Obstructed Hernia	10
Umbilical Hernia	6
Ventral Hernia	12
Repair Vesico-vaginal Hernia	1
Operations for Appendicitis—	
Appendicectomy	485
Appendix Abscess	12
Operations upon the Stomach and Intestines—	
Perforation of Gastric Ulcer	2
Perforation of Duodenal Ulcer	4
Colostomy	4
Intestinal Obstructions	11
Laparotomy	48
Gastro-enterostomy	21
Intussusception	2
Laparotomy for Tubercular Peritonitis	7
Lateral Anastomosis	3
Paracentosis Abdominis	14
Operations on the Bladder—	
Supra Pubic Cystotomy	45
Nephrectomy	2
Cystoscopy	3
External Urethro	3
Excision of Malignant Growth	1
Vesical Calculis	2
Operations upon the Urethra and Penis—	
Dilating Urethral Stricture	274
Prostatectomy	6
Circumcisions	273
Resection of Omentum	1
Gastro Duodenostomy	1
Amputation of Penis	10
Urethrotomy	5
Reduction of Paraphymosis	38
Perineal Sictism	4
Operations on the Scrotum and Testicle—	
Radical Cure for Hydrocele	47
Orchidectomy	10
Tapping Hydrocele	7
Operations on the Anus and Rectum—	
Anal Fistulae	22
Hæmornoidectomy	27
Dilating Rectal Stricture	17
Recto Vaginal Fistula	1
Incision Genital Abscess	2
Transplantation of Ureter	1
Operation upon Spleen	1
Legaturing Artery	3
Incision Ischis Rectal Abscess	9
Gelerosing Hemorrhoids	2
Varicocele	3
Trendelenburg for various veins	1
Dorsal Slit	6
Amputations	186
Operations upon the Ear—	
Radical Cure for Mastoid	6
Plastic Operations on the Ear	1
Conservative Operation for Mastoid	2

	Number.
Operations on the Nose, etc.—	
Removal of Adenoids	96
Tonsillectomy	361
Nasal Polyp	21
Tracheotomy	3
Operations on the Thorax—	
Amputation of Breast for Malignancy	18
Adenoma of Breast	4
Incision Abscess of the Breast	7
Empyema	9
Aspiration of Thorax	3
Operations on Tendons—	
Suturing Tendons	73
Lengthening Tendo-acchillis	2
Operations on Antrum and Frontal Sinus	19
Ophthalmic Operations—	
Extraction of Cataract	19
Needling Cataract	10
Enucleation of Eyeball	39
Iridectomy	2
Meibomian Cysts	22
Pterygium	10
Lachrymal Apparatus	1
Operations on Affections of Bones—	
Osteomyelitis	56
Osteotomy	2
Sequestrotomy	63
Excision of Knee Joint	3
Resection	1
Dislocations	73
Fractures of Bones—	
Plating Femur	133
United Fractures	28
Wiring Fractures	22
Hallux Volgus	1
Depressed Fracture of Frontal Bone	8
Depressed fracture of Molar Bone	2
Reduction and Silting	12
Excision of Glands—	
Cervical	17
Axillary	5
Inguinal	113
Operations upon the Thyroid Gland	1
Excision Thyro-glossal Cyst	1
Tenotomy	2
Operations upon the Liver and Gall Bladder—	
Laparotomy for Ruptured Liver	4
Cholecy Stectomy	5
Draining Gall Bladder	3
Incision of Abscess	1,118
Suturing Wounds	568
Removal of Foreign Bodies (bullets, needles, etc.)	171
Examinations	164
Scraping Ulcers	135
Dental Extractions	3,266
Excision of Ganglion	3
Excision of Toe Nail	60
Excision of Finger Nail	4
Excision of Lipoma	18
Excision of Papilloma	1
Excision of Keloid	6
Excision of Epulis	10
Breaking down Adhesions	37
Skin Graft	23
Excision of Tubercular Glands	18
Excision of Bursae	19
Excision of Fibroma	15
Excision of Carbuncle	43
Amputation of Supernumerary Digits	21
Sebaceous Cysts	31
Operation for Hare Lip	3
Plastic Operation for Contractures of Arm	2
Bronchoscopy	
Sigmoidoscopy	1
Trephining for Cerebral Compression	5

	Number.
Cauterisation of Warts, Sinuses, etc.	35
Incision of Sinus	9
Closing Pneumo-Thorax	1
Miscellaneous	333
Phrenecectomy	17
Other Minor Operations	348
Operations for Cancre—	
Of Face	1
Of Soft Palate	1
Ligation of Arteries for Aneurysm	2
Phlebotomy for Septic Phlebitis	3
Aspiration of Joints	11
Incision Septic Wounds	29
Varicocelectomy	1
Draining Perineal Abscess	4
Peri-arterial Sympathectomy	2
Total	10,455

(F) REPORT AND RETURNS OF THE MEDICAL ATTENDANT TO LEPERS' HOME.

	Males.	Females.	Total.
Number of patients remaining on 31.12.33	62	57	119
" " admitted during the year ending 31.12.34	18	16	34
" " discharged 31.12.34	2	5	7
" " absconded 31.12.34	5	1	6
" " died 31.12.34	4	5	9
" " remaining 31.12.34	69	62	131

of those remaining ten (10) were children under 15 years, 6 males, 4 females.

Daily average during the year	63.8	60.2	124

Death rate 5.8 per centum

		Years.
Average stay of those who died	19	10/12
" " " discharged	1	3
" " " absconded	5.7/12	1
" " " remaining	11	17
Longest stay of any one inmate	..	53.10 months

No East Indian admitted during the year.

Staff and Accommodation—

1 Medical Attendant, who is also D.M.O. for Spanish Town.
1 Superintendent and Dispenser.
1 Matron—a certificated trained nurse.
4 not nurses (untrained).
2 Cooks.
1 Messenger.

There is only one trained Nurse (the Matron), attached to this Institution, and there is no Clerical Assistant for the large amount of office work.

The services of inmates who are able and willing are used in various occupations (e.g.) porters, day and night labourers, under-nurses, garden, laundry, for which they receive rewards; names and amounts paid are sent up regularly.

Condition of Buildings and Grounds.—No addition to buildings during the year, ordinary repairs effected by the Public Works Department. There is urgent need for extensive repairs to buildings, drains, and pavements. The grounds are in good order; a liberal supply of marl would help to render pathways free from ruts, and prevent puddles after rain.

Sanitary Arrangements.—Dry earth bucket system, the contents being disposed of daily by burial in the farm attached to the Institution.

Drainage.—By open surface concrete drains, the fall is, however, very small and drains in urgent need of repairs.

Water Supplies.—Spanish Town Water Works, quality fair, pressure low, quantity unlimited.

Dietary.—As approved by His Excellency the Governor.

Recreation.—Outdoor: cricket, croquet, picnics, gardening.
Indoors: cards, dominoes, draughts, gramophone.

Treatment.—Sodium Gynocardate (tablets), Moogral- Mixtures and inunction.

I find that the patients resent treatment by hypodermic injections, except in very special cases, and our experience is that this method does not give the best results to the patients here.

The prevalent disease treated during the year was influenza, of which a large number of the patients suffered.

Improvements suggested—

1. Additional ward, female compound, and/or detached cottages. The female inmates are at present 12 in excess of available space.
2. Enlargement of Lunatic Compound, and additional separation rooms.
3. More land for farm—at present 4 acres only available.
4. Shower baths for inmates. This would effect better sanitation and avoid waste of water.
5. Better water supply to efficiently cope with fire.
6. Offices and Dispensary, the present ones used are a portion of old inmates' infirmary.
7. Store Rooms: Linen and provision. Those in use very old, easily broken into.
8. Kitchen might be supplied with the stove previously asked for, or, suitable fire range. Cooking at present time under very great difficulty in inmates' airing court.
9. Phone Connection to link up with Kingston.

Visitors.—We were honoured by several distinguished visitors among whom were: Hugh Walpole, Esquire, the famous novelist; and Dr. Robert G. Cochrane, M.D., Secretary of the British Empire Leprosy Relief Association, London, England.

My thanks are due to the following, among others, for their very generous gifts of reading matter, tobacco, etc., all of which I appreciate, and the inmates very thankful:—Sir Ransford Slater and Lady Slater; Hon. Major T. J. Hallinan and Mrs. Hallinan; W. F. M. Copeland, Esq., brother of Lady Swettenham (England); Dr. John E. Ransome of Johns Hopkins Hospital, Baltimore, M.O., U.S.A.; Dr. Jean Moffatt, late of the Child Welfare Dept., Kingston; Hon. A. E. Wigan, Mrs. M. Hitchens, 7 Hill Gardens, Constant Spring; Miss Biggar, c/o Deaconess Home; A. R. McGrath, Esq., Brown's Town, St. Ann; Mrs. and Mrs. R. J. Farrell, 48 Craig St., Ottawa, Ont., Canada; Y.M.C.A c/o E. B. Hallett, Esq.; Toc H. c/o E. B. Hallett, Esq.; Miss Eva Mockler, Spanish Town; Miss E. Lyle, May Pen; Capt. and Mrs. Staight, Dr. H. H. Blair, Miss Marvin, Deaconess Home, Kingston; Edwin Charley, Jas. Dunn, L. C. Nunes, Hon. John McPhail, Custos of St. Catherine; G. B. Wichen, Esq., Munro College.

Religious Ministrations.—This has been regularly carried out by the Church of England under Rev. Canon F. G. Jolly, of the Cathedral, Spanish Town, who is the Chaplain of the Institution. Miss Marvin of the Deaconess Home, Kingston, and the Licensed Lay Readers, the Lord Bishop of Jamaica visiting and confirming: the Church of Rome under Rev. Fr. Francis Kelly, S.J., and his devoted assistants, the Salvation Army, and the Seventh Day Adventists.

Miss Margaret McPherson, Matron for 22 years, during which period she rendered devoted, faithful and competent service, went on leave 15th December, 1934.

A. A. Anderson,
Medical Attendant

VI.—PRISONS.

Reports of the Medical Officers of Prisons.

General Penitentiary, Kingston.

The general health of the prisoners on the whole was good.

The sanitary condition of the Prison was maintained at a satisfactory standard. Flyproof screens to protect food in the kitchen were recommended and put in use.

During the period under review 1,012 prisoners were admitted to the Prison, of this number 6 were in good health. 1,120 prisoners were discharged of whom 2 were in good health. There were 6 deaths including 1 case of suicide by hanging.

Health of the Staff.—340 cases of illness were treated during the year, among these were 1 case of serious wounding of an officer by a prisoner, and 2 cases of gunshot wound by an officer on two of his comrades.

Return of Medical Statistics for the General Penitentiary, Kingston, during the year ended 31*st December*, 1934.

Number of prisoners in custody 1.1.34	691
Admitted during the year	1,012
Discharged during the year	1,120
Greatest number in custody on any one day	762
Daily average in custody	662
Removal on medical grounds	—
Removed to Lunatic Asylum	2
Deaths	6
Greatest number in hospital on any one day	61
Daily average in hospital	31
Number of treatments outside hospital	11,207
Major operations performed	2
Minor operations performed	72
Transferred to Public Hospital for major operations	2
Vaccinations performed	516
Salvarsan injection	142

R. H. Davidson,
Medical Officer.

St. Catherine District Prison.

State of Prison.—The sanitary condition of the wards, hospital, officers' quarters and compounds was maintained at a commendably high standard.

Health of Prisoners.—Thirty-one prisoners were admitted in poor health. The total number of admissions to hospital for the year was 568. The majority of admissions was for malarial fever, the incidence of which became especially marked towards the end of the year. Four prisoners died in hospital; two from typhoid fever contracted before admission to the Prison. There was one execution by hanging, carried out in accordance with the provisions of the Law. The mortality (excluding executions), based on the daily average number in custody was 7.130.

Health of Officers.—Eighty officers were treated during the year. Five officers were passed physically unfit for the Service.

Improvements.—No improvement was carried out during the year. Again I must stress the necessity for screening the quarters occupied by Principal Warders and Warders along Burke Road. The occupants of these quarters have suffered much from malaria during the year.

Return showing the following for the year ended 31*st December*, 1934.

Mortality from Execution 1, from natural causes 4	5
Insanity	2
Removal on medical grounds	1
Suicide	Nil
Cases treated among prisoners in hospital	568
Number in custody 31st December, 1934	532
Received into Prison during 1934	3,317
Daily average in custody during 1934	561.104
Death per 1,000 calculated on the daily average during 1934	7.130
Cases treated in Prison during 1934	1,580
Greatest number in custody any one day during 1934	711
Discharged during the year 1934	3,465
Number of Officers treated in the Prison during 1934	80
Number of prisoners received in feeble health during 1934	31
Number of prisoners discharged in feeble health during 1934	27
Daily average of sick in hospital during 1934	20.536
Daily average of sick treated outside hospital during 1934	87.512
Greatest number of sick in hospital any one day during 1934	36
Greatest number of sick treated outside hospital any one day during 1934	168
Number of cases treated outside hospital during 1934	1,042

H. H. Blair,
Surgeon.

Government Industrial School, Stony Hill.

There were 883 inmates treated in hospital during the year. The chief diseases encountered have been:

Chicken Pox	76 cases
Ulcers	214 "
Influenza	159 "
Indigestion	93 "

78 inmates were treated for Intestinal Parasites.

58 were inoculated with typhoid vaccine.

493 injections of Bismuth Salicyl, and 142 injections of Neo-Arsphenamine were given.

18 minor operations were performed.

There were 3 mortalities as follows:—

1 from Enteric Fever.
1 from Pneumonia.
1 from Pulmonary Tuberculosis.

Apart from the epidemic of Chicken Pox during September, the general health has been good.

S. C. Grant,
Medical Officer.

RETURN OF DISEASES.

Diseases.	General Penitentiary.			St. Catherine District Prison.			Industrial School, Stony Hill.		
	In-patients.	Deaths.	Outpatients.	In-patients.	Deaths.	Out-patients.	In-patients.	Deaths.	Out-patients.
Enteric Fever	1	..	..	6	2	..	1	1	..
Malaria	121	..	681	289	..	132	..	..	..
Yaws	..	..	..	6	..	17	17	..	..
Tuberculosis—Pulmonary ..	10	2	..	2	..	..	1	1	..
" of other organs ..	4	..	..	..	..	..	..	..	..
Influenza	5	..	52	..	..	..	159	..	..
Measles	..	..	..	..	..	..	..	..	..
Chicken Pox	..	..	..	2	..	27	76	..	..
Dysentery	48	..	..	1	1	..	..	..	..
Mumps	..	..	..	..	..	2	..	..	..
Soft Chancre	..	..	..	5	..	28	..	..	..
Diabetes	1	..	..	3	..	..	..	..	..
Syphilis ..	5	1	183	23	..	14	..	..	..
Gonorrhoea	1	..	151	10	..	65	..	..	..
Septicaemia	..	..	..	..	..	..	..	..	..
Cancer	..	..	..	1	..	..	..	..	..
Rheumatism Ante Chronic ..	8	..	65	..	..	..	2	..	..
" Chronic ..	..	..	..	1	..	10	..	..	..
Scurvy	..	..	..	..	..	..	..	..	..
Pellagra	..	..	..	..	..	..	..	..	..
Anaemia	4	..	140	5	..	8	2	..	..
Ankylostomiasis	2	..	..	15	..	11	..	..	..
Appendicitis	1	..	..	..	..	..	..	..	..
Hernia	..	..	..	3	..	34	..	..	..
Affections of Nervous System ..	23	..	347	16	..	25	35	..	..
" Circulatory System ..	11	..	107	25	1	28	2	..	..
" Respiratory System ..	14	..	301	11	..	14	46	1	..
" Skin and Cell Tissues ..	44	..	1,342	54	..	252	261	..	..
Diseases of Digestive System ..	65	..	3,636	33	..	150	188	..	..
" Genito-Urinary System ..	13	2	284	11	..	17	2	..	..
" Puerperal State ..	1	..	..	..	..	..	..	..	..
" Bones and Organs of Locomotion ..	3	..	36	4	..	4	..	..	..
Affections produced by external causes ..	72	1	3,790	35	*1	177	88	..	..
Ill-defined diseases	64	..	91	5	..	23	1	..	..
Diseases of Infancy ..	.	..	..	..	..	..	1	..	..
Diseases of Old Age ..	..	..	..	1	..	..	..	..	..
	521	6	11,206	568	5	1,042	883	3	..

* Execution.

VII.—SCIENTIFIC

Report of the Bacteriological and Pathological Laboratory.

Administration.—At the end of the year the Laboratory Staff consisted of:—

The Bacteriologist and Pathologist.
The Assistant Bacteriologist and Pathologist.
7 Assistants.
1 Clerical Assistant.
2 Washers and Cleaners.

New members of the Staff are Messrs. A. K. Elliott, S. H. Bernal, S. A. Valentine and B. L. Gibson.

Messrs. L. S. Grant and W. FitzRitson severed their connection with the Laboratory and proceeded abroad to study medicine.

The Bacteriologist was in the United States on leave during the last quarter of the year. The Assistant Bacteriologist acted during this period.

During the year the Laboratory removed to more adequate quarters at the corner of North and Princess Streets, into the building formerly occupied by the Island Medical Office. The new Laboratory has been well furnished and re-equipped throughout.

The work of the Laboratory continued to increase—27,379 specimens being dealt with in 1934 as compared to 15,099 in 1933. This made it imperative to have additional staff. Accordingly Dr. L. E. Arnold (M.D., C.M., D.P.H., McGill) was seconded from the Yaws Commission for service as Assistant Bacteriologist; he assumed duty in March. Owing to the absence of the 2nd Laboratory Assistant it was also possible to pay an additional assistant out of savings from his salary.

As from July 1st the Laboratory undertook the routine syphilis serology of all patients admitted to the Kingston Public Hospital.

During the year the training of Volunteers was approved. This has proved of great value in providing new material for the Staff.

On moving into new quarters at the end of September the Laboratory undertook to examine all specimens of a Public Health nature free of charge. Though this advance has entailed a considerable increase of work its advantage is undoubted.

In October the Laboratory took over the examination of slides for the Malaria Commission. There were 615 of these examinations during the last 3 months of the year. An Assistant is paid by the Malaria Commission for this service.

GENERAL.

Equipment.—Owing to a very necessary increase in appropriation for Laboratory requisites it was possible to purchase some new apparatus. This includes water-bath, incubator, hot-air steriliser, embedding oven, 2 centrifuges, a new microscope and 2 refrigerators.

Serology: (1) *Syphilis.*—The Kahn Precipitation Test was used during the greater part of the year, the Wassermann Reaction only for a few weeks as a check on average figures. In this, as in all the rest of the work, a marked increase was evident—8,842 specimens being examined, an excess of 3,232 over 1933.

(2) *Enteric Diseases.*—There was an increase of nearly 100% in the number of Widal tests performed—from 1,477 in 1933 to 2,526 in 1934. Of these 44% were found to be positive compared to 40% in 1933. As the Dreyer formalised culture was found to give more constant results than the live culture it was used throughout the year.

Stool Examinations showed an increase of about 50%. This was most marked in the search for Amoeba—669 in 1934, 388 in 1933. Of these nearly 50% contained Amoeba histolytica as in former years.

Smears for Malarial Parasites increased from 280 in 1933 to 1,635 in 1934. This was partially caused by the work of the Malaria Commission (615 slides). These smears continue to show a positivity of approximately 25%.

Preparations.—In addition to making and bottling 22,920 cc of Typhoid vaccine for distribution, 1,410 bottles of Bismuth Salicylate in oil were supplied with beads to facilitate emulsion for the treatment of Yaws.

Table I.—Origin of all Specimens.

	1930.	1931.	1932.	1933.	1934.
Kingston Public Hospital ..	6,406	7,433	9,061	10,099	19,259
Mental Hospital	568	687	701	601	967
Other Institutions	445	182	1,181	1,926	1,826
Country Medical Districts ..	942	708	875	1,018	1,783
Health Officers	..	..	175	739	2,709
Private Practitioners	509	907	642	716	835
	8,870	9,917	12,635	15,099	27,379

Table II.—Distribution of Specimens.

	1930.	1931.	1932.	1933.	1934.
Autogenous Vaccines	..	157	46	61	47
Autopsies	113	103	118	114	148
Bismuth	..	..	..	..	1,410
Blood Examinations—					
Counts	93	188	202	251	350
Cultures	5	6	15	14	25
Parasites	82	141	86	280	1,635
Parasites (Malaria Commission)	..	..	..	..	615
Sugars	56	146	308	517	606
Ureas	4	10	16	38	88
Examination of Faeces—					
Helminths	737	793	620	691	893
Amoebae	58	47	99	388	669
B. dysenteriae	26	6	110	116	200
Miscellaneous	..	..	44	59	40
Examinations for Gonococci	51	85	90	151	202
Examinations for Tuberculosis	478	337	375	422	464
Gastric Analyses	5	3	11	16	38
Medico-Legal Examinations	64	99	162	121	202
Milk Examinations	..	..	80	..	28
Morbid Histology	55	63	77	85	127
Persons Vaccinated	..	..	..	139	119
Serology of Syphilis	4,466	6,201	7,489	5,610	8,842
Serology of Enteric Diseases	497	538	825	1,477	2,526
Throat Swabs	12	13	81	102	122
Typhoid Vaccine prepared	..	..	828	1,294	1,146
Unclassified Examinations	26	16	126	204	86
Urinalyses	1,962	940	1,293	2,275	5,994
Water Examinations	234	199	362	664	742

Table III.

Causes of Death.	Ordered for Coroner.	Requested by M.O.'s. of Hosp.	Total.
General Diseases—			
(1) Syphilis (Neuro-Vascular, etc.)	..	7	7
(2) Malarial Fever	..	3	3
(3) Enteric Fever	..	3	3
(4) Septicaemia	1	3	4
(5) Miliary Tuberculosis	..	1	1
(6) Asthma	..	1	1
(7) Status Lymphaticus	..	1	1
(8) Pernicious Anaemia	..	2	2
(9) Malnutrition and Inanition	..	3	3
	1	24	25
Injuries—			
(1) Asphyxiation	..	1	1
(2) Burns (shock and sepsis)	6	..	6
(3) Fracture of Long Bones	6	..	6
(4) Fracture of Skull	7	..	7
(5) Fracture of Ribs	2	..	2
(6) Fracture of Vertebrae	1	..	1
(7) Rupture of Intestine	2	..	2
(8) Rupture of Spleen	1	..	1
(9) Bullet wound of Brain	1	..	1
(10) Minor injuries (with Tetanus)	2	..	2
(11) Poisoning (Cresol, Arsenic, Ascaridal	6	..	6
	35	25	60
Diseases of Brain Meninges—			
(1) Cerebral Softening (Syphilitic)	..	3	3
(2) Cerebral Haemorrhage	..	5	5
(3) Cerebral Abscess	..	2	2
(4) Cerebro Spinal Meningitis	..	2	2
	35	37	72

Table III., *Continued.*

Causes of Death.	Ordered for Coroner.	Requested by M.O's. of Hosp.	Total.
Diseases of Circulatory System—			
(1) Aneurysm of Aorta ..	..	1	1
(2) Ulcerative Endocarditis ..	..	1	1
(3) Cardiac Failure (Coronary Disease, Acute Dilation, Valvular Insufficiencies, etc.) ..	3	4	7
	38	43	81
Diseases of Respiratory System—			
(1) Pulmonary Tuberculosis	1	8	9
(2) Lobar Pneumonia ..	..	6	6
(3) Broncho Pneumonia ..	..	3	3
	39	60	99
Diseases of Excretory System—			
(1) Acute Nephritis ..	..	3	3
(2) Chronic Nephritis (Cardio-renal)	1	7	8
(3) Uraemia	..	2	2
(4) Pyonephrosis ..	..	1	1
	40	73	113
Diseases of Digestive System—			
(1) Gastro-enteritis ..	1	4	5
(2) Gastric Ulcer ..	1	1	2
(3) Duodenal Ulcer ..	..	3	3
(4) Cholecystitis ..	1	..	1
(5) Peritonitis ..	2	2	4
(6) Dysentery	..	1	1
(7) Ascariasis	..	3	3
(8) Pancreatitis (haemorrhagic)	..	2	2
(9) Intestinal Obstruction (Valvulus Hernia, Intussuception)	..	8	8
	45	97	142
Diseases of Reproductive System—			
(1) Ectopic Gestation ..	..	2	2
	45	99	144
Neoplasms—			
(1) Sarcoma (Iliac Bone) ..	..	1	1
(2) Carcinoma (Liver, Pylorus, Rectum)	..	3	3
	45	103	148

Table IV.—Preparation of Media.

Media.	Quantity.
Vitamin Agar	33,000 cc
Loeffler's Medium	1,380 cc
Broth for Waters	254,000 cc
Ascitic Agar	480 cc
Blood Agar	300 cc
Russell's Medium	1,000 cc
1% Sodium Taurocholate	1,500 cc
Phosphate Broth	4,000 cc
20% Lactose	6,000 cc
1% Sugars	4,000 cc
Nutrient Broth	5,000 cc
Endo Agar	9,000 cc
Serum Agar	540 cc

It will be observed that the work of the Laboratory increased by more than 80% during 1934—from 15,099 in 1933 to 27,379 in 1934. It would have been quite impossible to handle this volume of work had not a larger building and new equipment been provided. There have been 3 temporary additions to the staff. Despite this the staff remains inadequate. The work received can never be completed in usual office hours of the Civil Service. Overtime and Sunday work have become routine.

K. Leigh Evans,
Government Bacteriologist and Pathologist.

Please insert the table IIa after table II page 41 of the Annual Report of the Medical Department of Jamaica for the Year 1934.

TABLE IIa.

Nature of Test.		Kingston Public Hospital.	Mental Hospital.	Other Institutions.	Country Medical Districts.	Heatlh Officers.	Private Practitioners.	Total.
Autogenous Vaccines—								
(B. coli, Staphyloccus, M. catarrhalis, etc.)		47	..	..	..	..	..	47
Blood Examinations—								
Counts		301	22	1	4	..	22	350
Cultures		18	..	1	..	..	6	25
Malarial Parasites	+	372	36	..	..	123	12	543
Malarial Parasites	−	885	274	1	12	498	37	1,707
Sugars		592	2	..	1	1	10	606
Ureas		82	3	..	..	..	3	88
Bismuth		..	..	..	..	1,410	..	1,410
Examinations of Faeces—								
Ankylostome	+	96	26	33	39	6	3	203
Ascaris	+	15	12	10	5	2	2	46
Trichocephalus	+	56	41	9	17	7	4	134
Helminths	−	365	28	38	45	9	25	510
Amoebae	+	125	42	9	11	5	12	204
Amoebae	−	250	151	4	26	10	24	465
B. dysenteriae	+	2	10	..	5	1	5	23
B. dysenteriae	−	10	142	..	6	4	15	177
Miscellaneous		23	9	..	..	3	5	40
Examinations for Gonococci—								
Gonococci	+	22	..	1	8	1	17	49
Gonococci	−	66	..	1	13	1	30	111
Gram-neg. Diplococci	+	36	..	..	2	..	4	42
Examinations for B. Tuberculosis—								
B. tuberculosis	+	38	8	6	67	8	7	134
B. tuberculosis	−	136	37	15	120	17	20	345
Examinations of Milk		2	2	..	1	23	..	28
Medico-legal articles—								
Blood	+	..	..	..	..	..	..	94
Blood	−	..	..	..	..	..	..	29
Semen	+	..	..	..	..	..	..	25
Semen	−	..	..	..	..	..	..	54
Morbid Histology		56	7	2	56	..	6	127
Serological Examinations—								
Kahn Precipitation								
	+	2,445	..	52	165	4	98	2,764
	−	3,763	..	168	216	9	221	4,377
Doubtful	+	39	..	1	14	..	4	58
Wasserman Reaction:								
	+	573	..	22	22	6	7	630
	−	870	2	17	37	..	25	951
Doubtful	+	27	1	2	4	1	..	35
Spinal Fluid		21	1	..	4	..	1	27
Widal Reaction:								
B. typhosus	+	509	68	7	453	37	36	1,110
B. typosus	−	948	24	5	365	22	49	1,413
B. paratyphosus A	+	..	..	..	1	..	..	1
B. paratyphosus A	−	..	..	..	..	..	2	2
Stomach Contents—								
Test Meal		37	..	..	..	..	1	38
Throat Swabs—								
Diphtheria	+	16	..	..	2	1	2	21
Diphtheria	−	40	..	5	15	9	4	73
Vincent's Angina	+	4	..	..	..	..	2	6
Streptococci	+	14	..	..	4	3	1	22
Typhoid Vaccine—								
20cc. bottles		..	..	1,146	..	..	..	1,146
Unclassified Examinations		43	9	7	13	2	12	86
Urine Examinations—								
Chemical qualitative		4,461	6	..	10	4	59	4,540
Chemical quantitative		165	..	..	..	2	2	169
Bacteriological		1,220	4	1	20	..	40	1,285
Water Examinations—				K. & St. A. (Water Bd.)				
Filtered:								
Positive		..	..	2	..	6	..	8
Doubtful		..	..	9	..	16	..	25
Negative		..	..	1	..	19	..	20
Filtered Chlorinated:								
Positive		..	..	1	..	17	..	18
Doubtful		..	..	153	..	204	..	357
Negative		..	..	41	..	112	..	153
Unfiltered:								
Positive		..	..	3	..	24	..	27
Doubtful		..	..	..	..	12	..	12
Negative		..	..	..	..	13	..	13
Unfiltered Chlorinated:								
Positive		..	..	..	..	24	..	24
Doubtful		..	..	3	..	21	..	24
Negative		..	..	49	..	12	..	61

Table I.—FINANCE.

Return shewing Cost per Occupied Bed for the year ended 31.12.34.

Hospitals.	Average No. of Beds occupied.	Cost of Staff.			Other Charges.			Total.			Cost per occupied Bed per annum.					
											Staff.			Other Charges.		
		£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Public Hospital, Kingston ..	356	18,713	3	5	27,272	6	7	45,985	9	0	52	11	3	76	12	2
Jubilee	29	1,462	2	7	2,449	0	6	3,911	3	1	50	8	4	84	9	0
Lepers' Home ..	123	1,014	8	0	1,980	0	0	2,994	8	0	8	5	9	16	1	11
Morant Bay ..	30	614	13	10	748	3	5	1,362	17	3	20	9	8	24	18	9
Hordley	33	820	1	11	812	11	8	1,632	13	7	24	17	0	24	12	6
Port Antonio ..	48	1,021	10	5	1,184	19	10	2,206	10	3	21	5	8	24	13	9
Buff Bay ..	44	903	16	9	770	2	10	1,673	19	7	20	10	10	17	10	11
Annotto Bay ..	53	934	6	9	1,222	15	9	2,157	2	6	17	12	7	23	1	3
Port Maria ..	65	1,032	7	2	1,493	14	1	2,526	1	3	15	17	7	22	19	10
St. Ann's Bay ..	39	810	4	11	1,117	8	5	1,927	13	4	20	15	1	28	13	1
Cave Valley ..	11	357	3	6	264	13	3	621	16	9	32	9	4	24	1	2
Falmouth ..	25	747	18	9	482	7	4	1,230	6	1	29	18	4	19	5	10
Ulster Spring ..	10	339	15	1	202	0	7	541	15	8	33	19	6	20	4	1
Montego Bay ..	63	1,209	14	0	1,862	13	2	3,072	7	2	19	4	0	29	11	4
Lucea ..	27	681	13	2	978	19	9	1,660	13	11	25	4	2	36	5	2
Sav.-la-Mar ..	74	1,031	11	2	1,432	0	6	2,463	11	8	18	18	10	19	8	1
Black River ..	70	940	14	10	1,324	11	6	2,265	6	4	13	8	9	18	18	5
Mandeville ..	33	887	15	1	764	9	7	1,652	4	8	26	17	10	23	0	10
Chapelton ..	33	866	0	1	876	15	5	1,742	15	6	26	4	7	36	11	4
Lionel Town ..	45	829	19	4	922	1	1	1,752	0	5	18	8	10	20	9	9
Spanish Town ..	67	994	12	5	1,314	14	2	2,309	6	7	14	6	10	19	12	5
Linstead ..	40	884	5	6	1,150	7	8	1,934	13	2	22	2	2	28	15	2
	1,318	37,097	18	8	50,626	17	1	87,724	15	9	..			..		
Lunatic Asylum ..	1,885	22,739	6	0	18,801	14	5	41,541	0	5	12	1	3	9	19	6

II.—Return showing the value of Drugs, etc., supplied to the various Institutions from the Island Medical Stores from 1.1.34 to 31.12.34.

	£	s.	d.
Value of Drugs and Sundries issued to Public General Hospitals, Lepers' Home and Medical Districts	5,822	15	2
Value of Stimulants issued to Public General Hospitals ..	18	19	6
" Drugs, etc., issued to Kingston Public Hospital ..	5,164	1	2
" Stimulants issued to Kingston Public Hospital ..	30	10	10
" Drugs, etc., issued to Jubilee Hospital ..	190	15	9
" Stimulants issued to Jubilee Hospital ..	0	3	7
" Drugs, etc., issued to Lunatic Asylum ..	299	12	9
" Drugs, etc., issued to Prisons and Industrial School	324	12	5
" Drugs, etc., issued to Department of Agriculture ..	10	8	10
" Drugs, etc., issued to Quarantine Board ..	0	1	11
" Drugs, etc., issued to Parochial Boards ..	969	19	1
" Stimulants issued to Kingston and St. Andrew Corporation	0	16	9
" Drugs, etc., issued to Constabulary Department ..	46	16	9
" Drugs and Sundries sold	295	15	7
" Lymph issued to District Medical Officers ..	619	13	6
" Lymph sold	7	17	3
" Drugs, etc., issued to Hookworm Commission ..	201	1	0
" Quinine issued to Post Office for packets ..	824	5	0
" Drugs issued for fumigation	35	15	1
" Quinine issued to Schools	59	9	2
" Quinine issued to Estates	12	10	0
" Drugs, etc., issued to Jamaica Government Railway	32	15	3
" Drugs, etc., issued to Tuberculosis Clinics ..	546	6	6
" Drugs, etc., issued to Malaria Commission ..	13	15	9
" Drugs, etc., issued for the control of Epidemic Diseases	317	16	7
" Drugs, etc., issued to Yaws Commission ..	769	15	4
— —	£16,616	10	6

III.—Return of Cases in the Kingston and St. Andrew Corporation Hospital for Infectious Diseases (for 5-year period).

Admission.	1930.	1931.	1932.	1933.	1934.
Chicken Pox	17	31	69	19	..
Measles	4	31	45	13	..
Syphilis	7	11	..	4	..
Diphtheria	..	..	..	..	1
Yaws	7	3	..	1	..
Whooping Cough	..	..	1	..	..
Mumps	5	..	..	..	..
Scarlet Fever	7	10	..	..	..
Leprosy	..	1	2	1	..
Impetigo	..	..	..	1	..
Under Observation	..	..	3	..	..

I. J. Cruchley,
Medical Officer of Health, Kingston and St. Andrew.

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MEDICAL DEPARTMENT.

Report for the year ended 31st December, 1934.

PART (II).

Co-operative Public Health Work in Jamaica during 1934.

History and Organization of The Jamaica Hookworm Commission, Training School for Sanitary Inspectors, The Jamaica Malaria Commission and Parochial Health Departments.

1. Co-operative public health work between the Government of Jamaica and the International Health Division of the Rockefeller Foundation began in 1919. During the past sixteen years the following eleven units of activity, conducted in the nature of demonstrations, have been undertaken: (1) Hookworm Commission; (2) School Hygiene Unit; (3) Bureau of Health Education; (4) School for Sanitary Inspectors; (5) Malaria Commission; (6) Parochial Health Departments; (7) Tuberculosis Commission; (8) Yaws Commission; (9) Improvement of Public Water Supplies; (10) Training of Health Workers; and (11) A Study of the Vital Statistics Department of the Island. All of these have received the co-operation of officials and of the people and have been highly successful. From the beginning all the co-operative work has been conducted under the supervision of the Superintending Medical Officer and the Central Board of Health. Each year the Local and Central Governments have assumed an increasing proportion of the cost of the co-operative units; during 1933 they took over the entire financial responsibility of the Hookworm Commission, the Malaria Commission, the School for Sanitary Inspectors, and the Parochial Health Departments; and in 1934 the School Dental Clinics and the clinical work of the Tuberculosis Commission. All of the units except the Hookworm Commission are of permanent nature and have been included in Government's permanent programme of health activities. Since Government is assuming control of and continuing the units organized during the past sixteen years, it is interesting to note the developments which have taken place as a result of these demonstrations in public health work.

2. The co-operative programme started with the *Hookworm Commission* which up to the present has conducted campaigns of sanitation and treatment in all but one of the fourteen parishes of the Island. The activities of this Commission are fundamentally educational; definite areas are selected in a parish and the homes are sanitated before treatment is begun. In each campaign an effort is made to reach every person; the family is taken as a unit and disease prevention is presented as a matter of personal interest. The story of hookworm disease and the results of treatment are explained by means of charts and an album of Jamaica photographs. The microscope is used and hookworm ova and larvae are shown to impress upon the people the necessity of providing and maintaining a latrine at each home. Lectures and conferences are given in each district.

The control of hookworm disease by such an intensive method, conducted from an educational standpoint, does much more than give relief from this one malady. A demonstration campaign affords an object lesson in public health by showing a community or parish what concerted effort organized under trained direction can accomplish. Aside from the direct results of controlling the disease the campaigns of the Hookworm Commission have aided in creating a favourable sentiment for sanitation and for the establishment of a permanent island-wide system of public health.

Organized public health work in Jamaica has developed as a result of the hookworm campaign. Following these it became the rule for each Local Board of Health to extend the areas of soil pollution control to include the entire parish. This undertaking required trained sanitary inspectors and these were found to need supervision and guidance to secure and maintain sanitation of a permanent nature. And, when other units of public health work were developed, it was found desirable for each parish to employ a Medical Officer of Health for his full time and to have an officer who has had special training for the work.

The value of hookworm campaigns as a means of educating the people in public health is well exemplified in Jamaica. As already stated, it has been the means of introducing modern public health work into the Colony; all of the units being conducted for the control of specific diseases and for the maintenance of public health have come into existence as a result of the work of the Hookworm Commission. And this Commission has been a training school for health workers; seven of the nine Medical Officers of Health already given permanent appointments had service in the Hookworm Commission, and more than 20 of the most successful Sanitary Inspectors had their first service with the Commission.

3. *The School for Sanitary Inspectors* has played an important part in the progress made in public health work in Jamaica. This is particularly true as regards the education of the people in disease prevention; the Sanitary Inspector is the one member of the Health Department who goes into the homes of the people and has the greatest opportunity for teaching them the underlying principles of keeping well. The School has always stressed the point that a Sanitary Inspector is a teacher rather than a policeman. The School was organized in 1927 and from its beginning has been affiliated with the Royal Sanitary Institute of London. Five sessions of the School have been held during the past eight years and 110 inspectors have been given training; 66 of these have passed the examinations and obtained the certificates of the Royal Sanitary Institute.

4. *The Jamaica Malaria Commission* was organized in 1929 to carry out measures indicated by a survey made in 1928-9 by Dr. M. F. Boyd, of the Rockefeller Foundation, assisted by Dr. F. W. Aris, a Government Medical Officer. The Commission has directed its attention mainly to control work in ten areas which contain seven of the more important seaport towns and three populous agricultural districts,

The activities of the Malaria Commission are conducted through a Central Office and Laboratory in Kingston, and the 10 Field Area units. The Central Office is the headquarters of the Director of the Commission, who is assisted by a technician. The work of this office, aside from the routine clerical and accounting work and the keeping of records and reports, consists of the microscopical examination of blood smears and the identification of larvae and adult mosquitoes sent in from the field units. Also, blood smears sent in by health officers and practitioners are examined.

Each field unit is in charge of a trained Sanitary Inspector who directs from two to five labourers. The area in which control is carried out extends, as a rule, for $1\frac{1}{2}$ miles from the centre of population and is divided into sub-areas In each sub-area is located one or more "catching stations" where mosquito catches are made at regular intervals, a white horse being used as bait. All the mosquitoes alighting on the animal during the $1\frac{1}{2}$ hours about sunset, or at times at dawn, are caught and sent in to the laboratory for identification. The catching stations are located so as to form concentric circles throughout the area, an arrangement which may assist in locating breeding places whenever there is an increase in the number of mosquitoes in the area.

The labourers under the supervision of an inspector are employed to apply Paris Green dust and to keep the banks of fresh water streams cleared of vegetation so that small fish can gain access to the larvae. During dry seasons the labourers gather dust, mixing it with Paris Green and storing it for future use. They also keep drains clear of debris which may cause standing water after showers. In addition to this routine work, each year an effort is made to carry out definite projects of permanent control. These include ditching and drainage, the sledging of holes in limestone rocks to prevent them from holding rainwater, the filling of small ponds, and the opening of channels to admit the sea into permanent water collections in order to keep these brackish.

The Inspector is constantly on the lookout for cases of fever occurring in his area. Each week he visits the hospital and other institutions and takes blood smears from all suspicious cases of fever; and the same procedure is carried out among the citizens of the area. These smears are sent to the Central Laboratory for examination.

Control in the field area is largely through the treatment of standing water with Paris Green dust. In two areas, in particular, destroying holes in limestone rocks has been highly effective. Subsoil tile drainage and open ditches are also employed. In such work, as well as by providing extra labourers, the Commission has had financial support from estates located in the areas.

In the control areas there has been a marked decrease in the spleen and blood rates and in the number of cases of malaria being treated at hospitals and dispensaries, while attendance at schools has greatly increased. These are all the more interesting since they were brought about within less than two years after control measures were inaugurated; and they have been maintained.

The success in controlling malaria in areas which were once badly handicapped by sickness from this cause makes the activities of the Jamaica Malaria Commission an outstanding piece of public health work in which results have been accomplished by applying information gained through a survey made before control measures were started.

5. *Parochial Health Departments.*—A natural outcome of the steady development of public health work in Jamaica was the organization of each parish as a unit through which disease control activities could be carried to the people. Kingston, St. Andrew, and Clarendon provided full-time health officers by 1925. In other parishes the need for such officers became recognized as more and more sanitary inspectors were employed and the people demanded that more attention be given to sanitation, the protection of public water supplies, and the control of infectious diseases. A study of the health needs of the Colony was made by a Medical Commission in 1928 which recommended that each parish should have a full-time Medical Officer of Health, with special training, appointed and paid by the Central Government. The plan was approved by the Legislative Council in 1929 and became effective April 1, 1930. All but one (Westmoreland) of the fourteen Parochial Boards have now accepted the plan. At the end of 1934, ten of the thirteen co-operating parishes were permanently organized under the new plan; the remaining three have Medical Officers of Health holding temporary appointments.

To assist in demonstrating the practicability of parochial health departments directed by full-time health officers with adequate staffs and equipment, the Rockefeller Foundation co-operated with Government and the Parochial Boards in the organization of such departments in St. Mary, Trelawny and St. Catherine. The health officers chosen for these departments were given special training on Foundation Fellowships. The demonstration in each parish continued for three to four years, the work being conducted under the direction of the Central Board of Health. The object was to find the most effective methods of conducting health work in Jamaican parishes. Each staff consisted of the full-time health officer, and office clerk, a chief sanitary inspector, and from 4 to 10 assistants.

The routine programme of work carried out in the three demonstration parishes has been adopted throughout the Colony, since these three departments were able, through the provision of more adequate budgets, to try out and determine effective methods; in this way they have served as examples to other parishes.

Among the activities of the parochial health departments, the control of communicable diseases takes first place; typhoid is one of the more important problems. Supervision of sanitation with the installation of latrines which will control the bowel filth diseases, the care of the sick in hospitals, and the vaccination of contacts are the steps taken to control typhoid. All cases of contagious diseases are visited by an officer of the department to insure that measures are being carried out to prevent their spread. Each parish has a small laboratory where examinations can be made for hookworm disease and clinics are conducted for the control of tuberculosis. In addition to these activities, each department is concerned with general sanitation, food sanitation and the examination of food vendors, as well as the inspection of water supplies.

The Local Boards of Health have a wide range of legal powers and duties under the Public Health Law, but in the past the lack of trained whole-time personnel has prevented the enforcement, or at least the effective enforcement, of regulations which would accelerate progress in disease control. But definite progress was made in the three demonstration departments in training the public to realize their legal responsibilities with regard to the spread of preventable diseases. And similar methods are being found effective in all the parochial health departments.

6. Through the co-operative health work definite problems have been undertaken as a means of demonstrating the value of disease prevention to the Government and the people. Teaching by demonstration has been effective in Jamaica; here as elsewhere a few definite and concrete examples of disease control have been more effective than a much larger number of partly performed undertakings could ever have been. This report gives a brief account of the development of each unit which has been taken over by Government; more space is given to the units still being conducted on a co-operative basis, especially to the work of the Tuberculosis and Yaws Commissions. This Report, however, is intended to serve only as an introduction to more detailed accounts of the activities of 1934 which are given in the Annual Reports of the different units

II.—The Bureau of Health Education.

The Bureau of Health Education was established in 1926 to meet the demands from teachers, sanitary inspectors, and citizens for information regarding personal hygiene and the spread and prevention of disease. In addition to educational activities the Bureau has acted as an adviser to the units of co-operative health work and also as a clearing house for the reports of these units; and through it the International Health Division extends its assistance to the Government of Jamaica. The Director of the Bureau is the Director for Jamaica of the Rockefeller Foundation and he was also Director of the Hookworm Commission, the Malaria Commission, the School Hygiene Work, The School Dental Clinics, the Tuberculosis Commission, and the Parochial Health Department until Government assumed direction of these units.

During 1934 the Bureau published Volume 9 of *Jamaica Public Health*, an edition of 20,000 being sent out each month. Particular attention was paid in this Volume to tuberculosis, yaws, the venereal diseases, cancer, typhoid, infant and child hygiene, malaria, and care of the teeth. As usual a Special Number was issued in August giving a health play for the use of schools during Empire Health Week. The monthly publication is used in more than 250 of the larger schools of the island as a text in hygiene and there is a demand for more copies than can be supplied.

Education in public health is of most value when there is an early opportunity of putting precepts into practice; the work of the Bureau of Health Education has been largely restricted to teaching the facts about public health problems which are receiving practical consideration in the Colony. It is most important to educate the adult; the head of the family must be shown the necessity of disease prevention; he must give his consent before the school child can be vaccinated, given dental treatment, or have his adenoids and diseased tonsils removed. And it is the adult who pays the taxes which support control campaigns and permanent Health Departments. In Jamaica, at least, education of the adult has proved to be of greater importance than the education of the child.

Suitable literature is provided on the problems which are being dealt with by the Health Departments of the Island. Also special leaflets and posters and placards, designed for use in schools, at markets and other public places, to give information about the more common diseases, are distributed. During 1934 the Bureau of Health Education sent out 34 different publications; the total number of pieces of public health literature distributed being above 400,000.

A branch of the Bureau of Health Education is the Division of Pre-Natal Work. A set of nine monthly letters is sent out to expectant mothers to teach them the normal changes which occur during pregnancy and the dangers which should be looked for and avoided; the names of such mothers are supplied by health officers, sanitary inspectors, nurses and social welfare organizations.

A paper entitled "The Control of Malaria in Jamaica, British West Indies," by B. E. Washburn, was presented at the meeting of the National Malaria Committee of the Southern Medical Association, San Antonio, Tex., November, 1934.

III. School Dental Clinics.

The first School Dental Clinic was organized in St. Andrew in 1926 through a co-operative arrangement between the Kingston and St. Andrew Corporation, the Central Board of Health, and the Rockefeller Foundation. The practicability of such work soon demonstrated and in 1927 clinics were started in the Kingston Schools. In 1928 the work was extended to St. Mary and Trelawny, to Clarendon, St. James, and Hanover in 1930, and to Portland in 1932. In addition to these, the parishes of St. Catherine and St. Ann arranged for clinics in 1933 without assistance from the Foundation. The co-operation of the Rockefeller Foundation was usually given for a period of two years, during which time it provided one-fourth of the cost, while the Central Board of Health provided one-fourth, and the parish one-half. After two years, the parish paid three-fourths of the budget. By the end of 1933, the financial co-operation of the Foundation had terminated in all the parishes except Portland; in this parish it continued until August 1934.

The School Dental Clinics are conducted from an educational standpoint. The dentist, provided with a portable outfit, visits the schools in turn and conducts clinics at the schoolhouse. Each child is examined and has his dental defects treated; he is also taught to keep his teeth clean and to go to a dentist regularly. There are lectures and demonstrations in oral hygiene and school health to which the parents are invited. The demonstration that modern dentistry is not as painful as aching teeth has made the pupils eager to obtain treatment; more than this, parents have become interested and increasing numbers of adults are losing their fear and visiting dentists for the first time in their lives.

The School Dental Clinics are conducted through the Parochial Health Departments as part of school hygiene work. The Medical Officers of Health examine defective pupils selected by the teachers and arrange for the correction of physical defects, such as decayed teeth, diseased tonsils and adenoids, and for the treatment of those infected with hookworms.

As mentioned, the Rockefeller Foundation assisted the Dental Clinics in Portland parish until August, 1934. Dr. L. A. Gibb was the dentist in charge; the following table gives the details of the eight months of co-operative work.

Total Hours of work.	Number of Pupils. treated.	Number of Treatments.				Total Treatments.
		Prophylactic	Fillings.	Extractions.	Others.	
402	2,546	1,514	1,013	896	87	3,510

IV. THE TUBERCULOSIS COMMISSION.

A—INTRODUCTORY.

In 1927 Government invited the Rockefeller Foundation to co-operate in a study of Tuberculosis. Professor Eugene L. Opie, of the University of Pennsylvania and now of Cornell University, was secured to direct the study. He visited the island in 1928 and supervised the establishment of a study clinic (dispensary) in Kingston, with Dr. E. J. Isaacs Saward as Medical Officer in Charge, to obtain direct contact with patients suffering from the disease in order that observations could be made of the forms, nature and course of the infection in individuals, family groups and contacts, and the influence of conditions of living upon its distribution. Dr. Opie paid yearly visits to Jamaica and kept in close touch with the work of the Tuberculosis Commission during the time the study was being made.

In November, 1930, Dr. C. W. Wells of the Foundation staff, began the operation of an X-ray Laboratory in connection with the Kingston Dispensary, being assisted by Dr. C. H. Parkin of the Public Hospital. In order to broaden the work of the Dispensary and gain a wider view of tuberculosis as it exists in a tropical country, the staff was joined in July, 1931 by Drs. H. H. Smith and E. W. Flahiff to assist in conducting enlarged and more intensive studies through a house-to-house canvass of certain sections of Kingston and of a number of smaller towns and rural sections of the Island. From the date of its opening, the number of patients coming to the Kingston Dispensary continually increased; in 1930 it became necessary to enlarge the staff of nurses and office clerks; and Dr. R. A. S. Cory was appointed Assistant Medical Officer.

Tuberculosis control in Jamaica has developed as a result of the work of the Kingston Dispensary, the X-ray Laboratory, and the Surveys of special districts. Along with the activities of these units, pathological studies have been conducted, as well as special studies of the tuberculin test at the Dispensary, the Mental Hospital, and the Government Industrial School. This Report will give a brief account of the work conducted by each of these Units, of the development of an island-wide programme of tuberculosis control, and of the work accomplished during 1934.

2. *The Tuberculosis Dispensary.*—Since its opening in July, 1928, this Dispensary has conducted activities which may be grouped under five headings: (a) The examination of patients and of contact cases.

The methods employed have been designed to make the patients feel that they receive not only a thorough examination but that the staff takes a real interest in their welfare and progress towards recovery. (b) Social Service Work by Visiting Nurses. The four nurses of the staff pay regular visits to the homes of patients to assist them in carrying out the directions of the doctor as regards rest, diet, and personal hygiene. Also contacts are seen and urged to come to the Dispensary for examination. (c) The Compilation of Records to make available for study the tubercular history of each patient and his family. (d) Laboratory Work. (e) Surgical Treatment. Since February, 1933, selected cases have been successfully treated by the procedures of artificial pneumothorax and phrenicectomy.

The Kingston Dispensary has made available a large number of patients, from the observation of whom valuable information regarding the nature and spread of tuberculosis in the city has been obtained. As a result of its routine work, the Dispensary aroused the interest of Government and the people in the control of tuberculosis throughout the island and similar dispensaries have been started in ten parishes. The need for hospital beds for tubercular patients was demonstrated and in 1931 a hospital of 42 beds for the care of such indigent cases was erected at Admiral Pen.

3. *X-ray Laboratory.*—The X-ray Laboratory as an adjunct of the Kingston Dispensary, was opened on January 20, 1931, to assist in the diagnosis of tuberculosis and to confirm the type of the disease. From the beginning these services were extended to physicians for the examination of their private patients; more than half of the doctors of the Colony availed themselves of this service.

4. *The Kingston Survey.*—In August, 1931, the facilities of the X-ray Laboratory were extended to make a tuberculosis survey of selected areas of Kingston. This survey, under the direction of Dr. C. W. Wells, assisted by Dr. H. H. Smith and a special staff, made a study of the areas of Smith Village, Hannah Town, Franklin Town, and Brentford Road. The first two areas are representative of the poorer sections of Kingston and with the greatest congestion of population. In Franklin Town the housing is better and the people live under less crowded conditions, while the Brentford Road area has still better housing and a population living under conditions as they exist in the best sections of the city. The information obtained from the survey of these four areas has been compiled and a study made of the effect of different conditions of housing and varying congestion of population on the incidence of tuberculosis.

The general procedure of the survey, which was completed in March, 1934, was to have an Inspector call on each household and take an accurate census of the inmates, at the same time making a sanitary survey of the premises. Two nurses then carried out tuberculin tests on all the members of the household as they were added to the census. Those who reacted to the test were given X-ray examinations; those showing lesions were given a physical examination and anyone requiring treatment was referred to the Dispensary or to his private physician.

5. *Pathological Studies.*—Through co-operation on the part of the authorities in charge of the Kingston and St. Andrew Corporation Poor House and of the Mental Hospital, autopsies were made on inmates dying of tuberculosis. The lungs from all these cases were carefully X-rayed and dissected and photographs made of specimens showing interesting aspects of tuberculosis. Bacteriological investigations were carried out on material obtained from these autopsies to study the nature and virulence of the tubercle bacilli found in Jamaican infections.

6. *Studies at the Mental Hospital.*—Through the interest and assistance of Dr. R. W. Dale Hewson, Medical Superintendent of the Jamaica Mental Hospital, tuberculosis studies have been conducted in that institution since 1928. Tuberculin tests, wherever possible, are made on all new admissions. These negative to the test are divided into two groups; one is kept for control while the other is given vaccinations of heat-killed tubercle bacilli injected into the skin of the forearm. The object of this procedure is to study the production of immunity induced against tuberculosis.

7. *The Mobile Unit.*—In addition to the work in Kingston, a Mobile Unit conducted a study of tuberculosis in the smaller towns and in rural sections of the Island. This unit was in charge of Dr. E. W. Flahiff, assisted by a nurse and an office clerk. A portable X-ray machine was part of the equipment. The unit began work in September, 1931, and up to the completion of its studies in April, 1934, had visited the parishes of Trelawny, St. James, Portland and St. Catherine.

The activities of the Mobile Unit in each parish may be grouped under four headings:—(a) The examination and classification of all cases of tuberculosis known to the Health Department and the examination of all contacts of these cases. (b) The establishment of a dispensary in the county seat where all persons presenting themselves with chest symptoms were given a physical examination and tuberculin tests, and X-ray pictures made of reactors. (c) Tuberculin tests were carried out in pupils of a school in each county town and those reacting were given X-ray examinations. Also, special surveys were made of the homes of children who reacted to tuberculin. (d) A house-to-house survey was carried out in special areas, the methods used in the Kingston survey being employed. One area was selected in the county town and at least one strictly rural community was included in the survey.

B.—THE WORK OF 1934.

During the first three months of 1934, the Rockefeller Foundation continued to support all units of the Jamaica Tuberculosis Commission. At the beginning of its financial year, April 1, Government accepted the responsibility of conducting the Kingston Dispensary and X-ray Laboratory. These organizations were continued along the lines adopted during 1933; for the three months the Foundation was responsible for their operation they did the following work, also the activities of the other units are given:

(1) The Dispensary had 324 visits from new patients and 1,262 visits from old patients. The nurses paid 1,779 visits to the homes of patients; 447 tuberculin tests were made on contacts; and 676 specimens of sputum were examined.

(2) The X-ray Laboratory examined 1,065 individuals.

(3) The Kingston Survey came to a close with the completion of the Brentford Road area in March; during the two and a half months, 382 individuals were censused, 290 were tuberculin tested, and 232 were X-rayed.

(4) Pathological studies continued throughout the year; there were 30 autopsies performed.

(5) *Special Studies.*—During 1934, the studies at the Mental Hospital were continued; tuberculin tests were made on all new admissions, half of those negative being vaccinated with heat-killed tubercle bacilli and the others kept as a control group. Due to the very high death-rate from tuberculosis among the inmates of the Asylum, it is frequently difficult to determine whether the vaccine or casual infection maintains the tuberculin reaction. Also, many in the control group became positive after a short stay in the Institution. Because of this situation, a further study of vaccination with heat-killed tubercle bacilli was begun in November at the Stony Hill Industrial School to more accurately observe the effects of the vaccine on the skin. The features of particular interest in this study will be: (1) By X-ray examinations of every boy in the Institution, and of all adults on the staff; any source of casual infection will be largely eliminated. This will enable a more accurate study of: (a) The efficiency of the vaccine to produce skins hypersensitiveness; (b) The degree of hypersensitiveness produced; and (c) The length of time the hypersensitiveness is maintained. (2) A comparison can be made of the type of reaction to the vaccine produced in the young age group at the Industrial School with the older age groups at the Mental Hospital.

There are 366 boys at the Stony Hill School; by the end of 1934, tuberculin tests had been completed on 291, and 314 boys had been X-rayed. Of the tuberculin tests, 112 boys showed negative reactions to 1.0 mgm of O.T. Vaccination with heat-killed tubercle bacilli, using the same dosage and technique as at the Asylum, has been started on 56 boys, while the other group of 56 are being kept under observation as controls. Of the 39 adults on the staff of the Institution, 27 were X-rayed.

On December 12, 1934, a preliminary survey was begun of the nurses in the Training School of the Kingston Public Hospital. There are 107 nurses in this school and 97 had been given the tuberculin test and X-rayed by the close of the year. These nurses form another group suitable for the study of the protective value of the vaccine.

(6) *The Mobile Unit.*—From the beginning of January until April 11, 1934, this unit worked in St. Catherine parish, with headquarters at Spanish Town. The usual routine of work was conducted.

(a) *At the Dispensary in Spanish Town.*—147 old and 7 new patients were examined. Tuberculin tests were completed on 132 cases, 105 being positive; 13 specimens of sputum were examined, 6 being positive. The following lesions were found among the new patients: Pulmonary tuberculosis with sputum negative, 10; with sputum positive, 3; latent apical, 2; Calcified pulmonary nodules, 4; calcified tracheo-bronchial lymph nodes, 2; suspected tuberculosis or diagnosis incomplete, 7.

(b) *A Survey was made of a Representative Area of Spanish Town.*—This was begun in September, 1933, and completed in February, 1934, with the following results; 227 households were censused, the population being 1,006. Tuberculin tests were carried out on 650 persons, of whom 491 reacted; 383 of these reactors were X-rayed with the following findings: Pulmonary tuberculosis with sputum positive, 3; with sputum negative, 3; Latent Apical tuberculosis, 5; calcified pulmonary nodules, 14; calcified tracheo-bronchial lymph nodes, 4; massive caseous tuberculosis of the tracheo-bronchial lymph nodes, 1; suspected tuberculosis or diagnosis incomplete, 14.

(c) *Survey of a Rural Area,* began in January and ended in April, 1934. There were 297 households censused, the population being 1,074. Preliminary tuberculin tests were done on 861 individuals and 390 of these reacted, and 332 were X-rayed. The following lesions were found: Latent apical tuberculosis, 9; calcified pulmonary nodules, 9; calcified tracheo-bronchial lymph nodes, 6; suspected tuberculosis or diagnosis incomplete, 8.

(d) *Tuberculin Tests* were carried out on the pupils of the Brown's Hall and Sligoville Schools.

(e) *The Survey* of the 78 homes of the reactors among the *Infant Department of the Spanish Town Government School* was completed. The total population of these homes was 549; 390 individuals were given the tuberculin test and 289 reacted; 258 of the latter were X-rayed. This survey did not prove to be a case-finding method, but it showed that the children who reacted to the tuberculin test or had X-ray lesions lived in homes having a density of population much higher than that found in the area where a house to house survey was made.

On April 9, 1934, the Mobile Unit moved to Port Antonio in Portland parish and from there conducted a house to house survey in the Fruitful Vale area, this being a distinctly rural district among the hills. The survey, completed May 29, included 231 households with a population of 959. Tuberculin tests were done on 836 persons, of whom 341 reacted; 303 of the latter were X-rayed and the following lesions found; latent apical tuberculosis, 5; calcified pulmonary nodules, 9; calcified tracheo-bronchial lymph nodes 10; suspected tuberculosis or diagnosis incomplete, 9.

With the survey of Fruitful Vale the work of the Mobile Unit was completed. Aside from being an important means of securing data regarding the occurrence and course of tuberculosis in smaller towns and rural sections, the Mobile Unit proved of great importance in assisting Local Health Departments in organizing control work.

C.—Summary of Work of the Tuberculosis Commission.

Since its organization in 1928, the aims of the Jamaica Tuberculosis Commission have been: (1) to collect information concerning the character of the disease and the incidence of its various manifestations under varying conditions throughout the Colony; (2) to determine how the disease is spread and what conditions modify its transmission; (3) while making such studies to assist in the institution of procedures that, with present knowledge, give promise of combating the disease; and (4) by making use of newly acquired information to devise preventive measures adapted to local conditions.

At the Kingston Dispensary the spread of tuberculosis has been followed in more than 1,500 families observed more or less continuously over a period of six years. In connection with this, data has been gathered in regard to the incidence of tuberculosis at different ages, in relation to the number of persons of corresponding ages who attend the clinic, a comparison of the character of the disease in native black Jamaican with that in other races that make up the Island's population, relation of the disease to occupation, and an analysis of the occurrence of the disease in relation to the social customs that effect family life. A study of the facts underlying this data proved valuable in the formation of measures of control.

The survey of the four areas in Kingston provided information concerning the incidence and distribution of the various manifestations of tuberculosis in the city. The number of cases of the disease found in the field surveys of certain areas has been four times the number of those with tuberculosis who attended the Dispensary from the same areas.

The facts observed by the Mobile Unit make it possible to compare conditions in rural districts with those in centres of population such as Kingston, Spanish Town, Montego Bay and Port Antonio.

The Mental Hospital, through its co-operation, is making it possible to study several significant problems related to the spread of tuberculosis, and to determine if protective inoculation will diminish the incidence of the disease. It is important to know if persons admitted to this Institution who have escaped tubercular infection, and hence fail to react to tuberculin, are, when later exposed to the disease, more likely to become ill with it than those who reacted before they were exposed.

D.—Results.

Important measures for the control of tuberculosis have been inaugurated in Jamaica since the co-operative study of the disease began in 1928. Dispensaries for the discovery of the disease have been established in Kingston and the larger towns of the Island, and hospitals have been provided for 8 of the 14 parishes for the care and segregation of indigent patients with tuberculosis. In describing results aimed at the control of the disease, mention must be made of the work of the Anti-Tuberculosis League. The League was organized in 1928 and has been highly successful in raising funds through the sale of Christmas Seals, donations from interested citizens, and special entertainments given for its benefit.

It has co-operated to the fullest extent with the Kingston Dispensary, paying the salaries and travel of two visiting nurses, as well as part of the expenses of a nurse in Spanish Town. In addition it provides a fund to buy food for indigent patients, and has paid the cost of keeping a number (12 during 1933, and 10 during 1934) of children from tuberculous families at the Rio Cobre Home.

During the five and a half years since its formation, the Tuberculosis Commission, assisted by the Anti-Tuberculosis League, has been the means of extending educational work regarding the disease to the more intelligent citizens of the Colony. A number of important developments have arisen from this: (1) There is better reporting of the disease than in the past; (2) In 1928 there was not a single dispensary in the Island where people with suspicious symptoms could be examined to find out if they had tuberculosis. At present such dispensaries are in operation in the Kingston and St. Andrew Corporation, St. Catherine, Clarendon, Manchester, Hanover, St. James, Trelawny, St. Thomas, St. Mary, St. Elizabeth and Portland parishes. (3) In 1928 there was not a single hospital bed in the Island for the care of tubercular cases and no Parochial Boards gave special care to indigent patients. Tuberculosis wards for indigent patients are now maintained at the poorhouses of Kingston and St. Andrew (42 beds); Portland (12 beds); St. Mary (16 beds); St. Ann (12 beds); St. James (16 beds); Manchester (8 beds). Plans are being made to build such wards by the Boards of St. Elizabeth and St. Catherine.

E.—Recommendations.

The information obtained as a result of the study of tuberculosis in Jamaica would indicate that the following observations are likely true for the Colony: (1) In Jamaica the disease spreads primarily from Kingston and the larger towns; (2) In the native Jamaican the disease usually pursues a rapidly fatal course; (3) The number of tubercle bacilli eliminated with the sputum of patients is far greater than in those suffering from the more chronic forms of pulmonary tuberculosis prevalent in northern countries but the period of elimination is much shorter. (4) The spread of tuberculosis in Jamaica is promoted by the crowding of yard rooms and tenement yards in Kingston and the larger towns and by the insanitary habits of the poorer people. (5) Country people who come to town acquire pulmonary tuberculosis and, when they are no longer able to support themselves, return to their families in the country and transmit the disease to them. (6) The acute tuberculosis prevalent in Jamaica is transmitted to others after a brief period of exposure often not exceeding a few months, and consequently several members of a family may die in rapid succession. (7) Obvious transmission of tuberculosis from one adult to another (e.g., from husband or wife to the consort) is much more frequent than in the north.

Based on the information obtained as a result of the study by the Tuberculosis Commission, taking into consideration the procedures by which control measures are being instituted, a Report was prepared by Dr. Opie containing recommendations for the organization of tuberculosis control measures in Jamaica and submitted to Government on August 13, 1933. This Report recommends:—

1. Organisation of all tuberculosis work under one Director who shall have direction under the Superintending Medical Officer of (a) all tuberculosis hospital work, including parish infirmaries; (b) tuberculosis dispensaries; and (c) of tuberculosis registration.
2. A Central Tuberculosis Clinic and Training School organized as part or unit of the Kingston General Hospital under the Tuberculosis Director and consisting of (a) Wards for tuberculosis, (b) Control Tuberculosis Dispensary of Kingston, and (c) of X-ray equipment.
3. Training of physicians (District Medical Officers, etc.) engaged in tuberculosis work in dispensaries, hospital wards, and parish tuberculosis infirmaries; tuberculosis nurses and sanitary inspectors in the Central Tuberculosis Clinic of Kingston.
4. Maintenance of tuberculosis wards in hospitals outside of Kingston under medical control of the Tuberculosis Director.
5. Maintenance of dispensaries and parish infirmaries by the parishes and under the medical control of the Tuberculosis Director.

F.—Government's Plan for the Control of Tuberculosis.

The Report prepared by Dr. Opie was approved by Government at the close of 1933; during 1934 steps were taken to organize tuberculosis control measures on a permanent basis. On April 1, 1934, the operation of the Kingston Dispensary and X-ray Laboratory were taken over by Government from the Rockefeller Foundation. Soon after this, the hospital at Admiral Pen was taken over from the Kingston and St. Andrew Corporation and its supervision placed in charge of the Medical Officers of the Dispensary. During the remainder of the year, beds for tubercular cases were provided in the Government hospitals at Mandeville, Black River and Montego Bay.

Plans for the erection of the Tuberculosis Clinic to be conducted as an adjunct of the Kingston General Hospital are still under consideration. The erection of this clinic in the near future depends upon a loan from the Colonial Development Funds, for which application has been made.

From April 1, 1934, the services of Dr. C. W. Wells, as an Advisory Commissioner on Tuberculosis, were offered to Government by the Rockefeller Foundation. Dr. Wells, up to the end of the year, had visited all the parishes to study their local tuberculosis problems and the provision they had made for controlling the disease. In each parish, the District Medical Officers and Medical Officers of Health were interviewed and with them measures were devised to develop local plans of tuberculosis control. In each of the nine parishes from one to three public addresses were delivered; these were well attended.

A census made in June of facilities for the care of tuberculosis in the Island showed 127 beds in the Poor House Infirmaries and 50 beds in special tuberculosis hospitals. At that time no beds had been provided for tuberculosis patients in any of the 20 Government hospitals. Another census made at the end of the year showed a total of 240 beds, or an increase of 63 beds during the six months. The 240 beds were distributed as follows: in poor house Infirmaries, 171; in Government hospitals, 17; in special hospitals, 52.

During the years (1926-32) that Lady Stubbs was in Jamaica she took special interest in tuberculosis work. When she was leaving the Island the women of Jamaica presented her with a fund raised by popular subscription. Part of this was donated by Lady Stubbs to the Anti-Tuberculosis League to be used in some form of tuberculosis work which would reach every parish. In 1931 this fund was increased and utilized to purchase a van equipped with a generator which would operate the portable X-ray outfit used by the Mobile Unit. This travelling Unit known as the "Lady Stubbs X-ray Unit" was presented to the Government at a public meeting held on November 26.

The Lady Stubbs X-ray Unit was put into immediate use by Dr. Wells and by the end of the year had been used in every parish of the Island. A total of 382 persons were X-rayed, of whom 140 were positive; 146 were negative; and in 46 the diagnosis was incomplete. Great interest was shewn in all the parishes in the visits of the Advisory Commissioner and, after its provision, in the work of the Travelling X-ray Unit.

In addition to the Annual and Special Reports made by the Directors of the different units of the Tuberculosis Commission, there have been published the following:

"Tuberculosis in Jamaica," by Eugene L. Opie and E. Joyce Isaacs; *American Journal of Hygiene*, July, 1930.

"Anatomical Characteristics of Tuberculosis in Jamaica," by Eugene L. Opie; *American Review of Tuberculosis*, December, 1930.

A number of papers are in preparation which give an account of the Surveys and studies made of different phases exhibited by tuberculosis in Jamaica.

V.—The Jamaica Yaws Commission.

1. Organization of the Yaws Commission.

The Yaws Commission was organized in 1932 upon the invitation of Government to the Rockefeller Foundation to co-operate in a study of the disease with the view of discovering the best ways of control. Since 1920 Government has made a systematic effort to control yaws, but in 1929 the number of cases treated was larger than ever before and it was realized that the methods of attacking the problem would have to be changed and made more effective. Dr. T. B. Turner of the Johns Hopkins University was secured to direct the investigation and Dr. G. M. Saunders, who had had experience with yaws in Liberia, came to assist in the work. Government appointed a Medical Officer to be associated with the Commission. A staff was employed and a field office opened in St. Thomas, while a central office and laboratory were established in Kingston.

The Commission soon found that much of the information concerning yaws as it manifests itself in Jamaica was unreliable, and there was but little reliable information regarding the effects of treatment and the ways in which the disease is spread. So during 1932 the field work was confined to districts about the village of Bath, with a population of above 2,500, where there were tried special methods of locating cases and of treating those found infected. As a result a method of survey, based on the intensive methods of the Hookworm Commission, was devised by which every home is visited and all infected cases located. Clinical and epidemiological studies were made; an investigation was conducted to determine the relative merits of certain drugs; a comparative study was carried out of the Wassermann test and the Eagle flocculation test in yaws; there was a study of the heart and aorta of yaws patients, with X-ray in addition to physical examinations; a study of the spinal fluid of yaws patients; X-ray investigation of bone lesion; and the isolation of *T. pertinue* in laboratory animals.

2.—The Work of 1933.

The study clinic was continued at Bath until the end of March, 1933, The clinical and epidemiological observation made served as a basis for a plan of control work which was applied and found effective in heavily infected districts during the remainder of 1933. Also, the search for new facts was continued.

At the beginning of its financial year, April 1, 1933, Government made provision for the salaries and travel of an additional Medical Officer for yaws treatment, as well as for drugs. Because of the eagerness of the people for treatment and the interest of the Local Boards of Health to secure treatment campaigns, it became necessary to conduct two units of treatment work. Since conditions of work limited the activities of these Units mainly to studying the effectiveness of drugs and treatment methods, it was found desirable to have a separate unit for the study of other problems. The Foundation made provision for a third medical man for this work. With this enlarged staff, the activities of the Yaws Commission during 1933 developed along three lines: The Work of (A) The Research Unit; (B) The Treatment Units; (C) the Central Laboratory.

A.—*The Research Unit*, organized in October, 1933, continued studies in the Bath and Seaforth Areas, in St. Thomas parish and also opened a clinic at Pleasant Hill in St. Andrew parish. The problems on which studies were begun or continued included: (1) A study of the central nervous system in yaws; (2) Collections of histological specimens of representative yaws lesions by biopsy; (3) Study of cardiovascular involvement by clinical methods and X-rays; (4) Study of transmission from two angles, (a) investigations of the circumstances surrounding each new infection which developed in areas already subjected to control measures and in districts where the incidence of yaws is low, and (b) investigations of the role played by *Hippelates flies*; (5) Study of new drugs; (6) Follow-up of old treated cases; (7) Study of the reaction of patients in order to determine (a) if the skin lesions of yaws develop from blood-borne virus or from direct inoculation from other infectious lesions and (b) if lesions could be produced in this manner so that a method for the investigation of transmission could be developed; and (8) Comparative studies of yaws and syphilis.

B.—*The Treatment Units.*—Two Units of the Commission engaged in treating patients; this work with the educational and follow-up campaigns being designed to control the disease. The object was to demonstrate methods by which yaws can be controlled and to obtain information, in particular, as to the results of treatment with varying numbers of doses of neo-arsphenamine and bismuth, the two drugs found to be the most effective. Each treatment unit was organized with its Medical Officer in charge of a "Survey Team" and a "Treatment Team." The first, consisting of two specially trained sanitary inspectors, goes into an area, makes a house-to-house census, and an inspection of each person who has had yaws, noting the presence and type of any existing lesions. The records of this survey are utilized by the Treatment Team who come to the area when the survey is completed.

A Treatment Team is composed of the Medical Officer and four assistants; one assistant helps with treatment work, two sanitary inspectors see that the patients report for examination or treatment, and a clerk keeps the records. An office is established in the area and the patients who were located during the survey come for treatment when notified. The first week in each area is given to the examination of patients and an average of seven weeks to treatment. A blood specimen is taken from each person at the first examination and again at the first treatment period; these are sent to the Central Laboratory for serological studies. About four months after the completion of an area the Treatment Team revisits the area for two weeks and treats new cases and cases which have relapsed. Similar revisits are planned after 8 or 10 months from the time the area was first visited. It is found that after a year, by the use of the above plan, the incidence of yaws in the heaviest infected areas has become reduced to the point where it can be controlled by the District Medical Officers. Fron April 1 to the end of 1933, Unit No. 1 surveyed and treated four areas and carried out follow-up campaigns in two areas of St. Mary parish; and also, surveyed an additional area. Unit No. 2, organized in October, completed survey and treatment work in one area and made a survey in a second area. During 1933, a total of 17,089 persons were censused, 6,830 of these had a history of yaws, of whom 2,957 were examined in the clinics and 2,212 treated with 4,577 injections of neo-arsphenamine and 3,092 injections of bismuth.

C.—*The Central Laboratory* served as an adjunct to the field work provided opportunities for laborarory investigations. The Wassermann and Eagle tests were made on over 15,000 blood specimens; investigations were made of experimental yaws in laboratory animals—strains of both syphilis and yaws were isolated and propagated in rabbits.

D.—*A Yaws Survey of Jamaica.*—Through the co-operation of the Department of Education, questionnaires were sent out to all schools in the Island, aimed at determining the incidence of yaws among the school children. Response to the questions was excellent, and on the basis of the returns an incidence map was prepared showing the distribution and the intensity of the yaws infection throughout Jamaica.

The Yaws Commission during 1933 succeeded (a) in organizing control work through treatment by a plan suitable for heavily infected areas; (b) carried out important research studies; (c) assisted Government in organizing control measures through the Health Department and District Medical Officers; (d) began a survey of the incidence of the disease; and (e) carried out effective education work in regard to the disease, its spread and control.

Dr. H. W. Kumm, of the Rockefeller Foundation, joined the staff of the Yaws Commission in November, 1933, to conduct entomological and epidemiological studies in connection with the disease.

3.—Work of 1934.

The work organized by the close of 1933 continued by the Yaws Commission during 1934. The two field treatment units carried on the campaigns designed to control yaws in thickly populated districts and to acquire more information about yaws as a disease in mass and in the individual, with special emphasis placed upon acquiring epidemiological data.

The Research Unit carried on investigations of special problems. These included: (a) Special studies in transmission which comprise mainly investigations into the life cycle and habits, anatomy and physiology of the digestion of *Hippelates flies*, also, attempts at transmission of yaws to rabbits by *H. pallipes*. (b) Investigations to determine if yaws causes neurological and cardiovascular damage in humans. (c) Comparative studies on yaws and syphilis in human beings and in laboratory animals; (d) pathological studies on representative yaws lesions obtained by biopsy.

The Central Laboratory continued to conduct the routine work of examining serological specimens, and the preparation and sterilization of supplies for the field units. Also, the office records and correspondence of the Commission are handled through the Central Office Laboratory.

The Treatment Units:—Unit No. 1 examined and treated in three new areas (Belfield in St. Mary and Troja and Redwood in St. Catherine) comprising a total population of about 8,000; and it carried on control work during ten separate follow-up periods in six areas (Castleton, Rock River, Richmond, Brainerd, and Belfield in St. Mary, and Troja in St. Catherine) previously treated and containing a total population of more than 10,000. The total number of new patients examined was 2,270; injections of neo-arsphenamine totalled 5,800 and of bismuth 2,900.

Unit No. 2 examined and treated four new areas (Broadgate and Enfield in St. Mary and Craigmill and Balcarres in Portland) having a total population of 15,380. Also, the unit carried on follow-up control work during five separate periods in three areas (Clonmel, Broadgate, and Enfield in St. Mary), with a total population of approximately 8,000. The total new patients examined at the clinics was 3,450; there were given 3,117 injections of neo-arsphenamine and 8,801 injections of bismuth.

Above 37,000 people were reached during the year by the two Treatment Units; Clinical examinations were made of 5,720 persons who were treated with a total of 20,618 injections.

Over the entire territory covered by the two Units, the incidence of yaws, that is, the proportion of the entire population which had had yaws at some time, amounted to about 50 per cent.

During the resurveys careful observations were made of the results of the treatment work. These follow-up studies brought out clearly the following points: (a) In areas controlled by repeated visits throughout a year it was found that the number of infectious yaws cases was reduced to approximately 25 per cent. of the number found when the areas were first surveyed. (b) The number of new infections arising during the year of control, hence the amount of spread of yaws, was reduced to probably 10 per cent. of that found during the year previous. The spread was more markedly reduced than was the number of relapsing and infectious cases. (c) Follow-up control work over a period of years would seem to be absolutely necessary in view of the appreciable number of infectious relapses found on resurveys. (d) Areas treated with bismuth compared favourably with areas treated with neo-arsphenamine. The individual relapse rate is higher following the use of bismuth but in controlling the spread of infection it appears to be nearly as efficient as neo-arsphenamine. (e) Additional data gained during the year support and further the view that in rainy areas and in rainy seasons there is a definite preponderance of yaws cases over the numbers found in dry areas and during dry seasons. (f) Special studies made concerning the source of contact of fresh infections examined during follow-up periods reveal that the vast majority can be traced to a pre-existing infectious case in the same household. Frequently there was a history of the new case sleeping with the old one. These facts would seem to signify that close association is necessary if one is to contract yaws; also, if there is an insect vector of any importance, this vector does not have a long range of flight. (g) It was thought desirable to check on the accuracy of the information obtained regarding the incidence and distribution of yaws in Jamaica in 1933, by surveying sample areas throughout the Island. This work was begun during the last quarter of 1934, eight areas containing a population of over 500 persons each having been done up to the close of the year. The data so obtained checks almost exactly with that gained from the school census.

Entomological Work.—The special studies begun by Dr. Kumm near the close of 1933 were continued during the year; these were mainly concerned with the anatomy, physiology, and life habits of the *Hippelates flies*. The frequency with which *H. pallipes* swam about the yaws lesions of patients was demonstrated. And it was shown that actively motile *T. pertinue* could exist in the intestinal tracts of such flies for many hours after they had fed naturally upon infectious yaws lesions. Incidental to work with yaws patients and infectious material, observations were made on the Jamaican species of *Hippelates* themselves. By keeping females in petri dishes with water and sugar it is possible to obtain eggs and breed larvae. The larvae can be transferred to wet sand mixed with decaying dog dung, and pupae and adults bred out. Adult females, caught in nature, have been kept alive for as long as ten weeks in petri dishes containing a few grains of dry sugar. In conclusion it may be stated that all the studies made during 1934 point to the fact that *H. pallipes* may be a natural vector of yaws. However, actual transmission of the disease from patients to rabbits has not yet been demonstrated.

The special work on cardiovascular involvement in yaws, the comparative studies made on the relationship of yaws and syphilis, and pathological studies will be presented in the Report of the Yaw Commission for 1934 and published in special papers.

A new method of transferring yaws to rabbits is being worked out; this promises to be much simpler and efficient and more rapid than the methods used in the past.

Central Laboratory—The Central Laboratory continued to operate as during the previous year. The following is a brief summary of the routine tests done during 1934:—

Wassermann Tests	16,222
Eagle Flocculation Tests	10,917
Spinal Fluid Examination	185
Wassermann Titrations	209
Pathological Sections examined	58

Papers submitted for Publication.—The following list gives the titles of papers submitted for publication during the year:—

"Yaws in Jamaica—A Plan of Control based on Treatment," by Drs. Turner and Saunders.
"Yaws in Jamaica—Epidemiology," by Drs. Turner and Saunders.
"Wassermann Reaction in Malaria," by Drs. Saunders and Turner.
"The Duration of Motility of the Spirochaetes of Yaws in a Small West Indian Fly—*Hippelates pallipes* Loew," Drs. Kumm, Turner and Peat.
"The Digestive Mechanism of one of the West Indian 'eye gnats' *Hippelates pallipes* Loew," by Dr. H. W. Kumm.

VI.—IMPROVEMENT OF PUBLIC WATER SUPPLIES.

Since 1930 the Foundation has assisted Government in improving public water supplies by placing the service of Mr. E. H. Magoon, of the Foundation's staff, at the disposal of the Central Board of Health. Mr. Magoon arrived in the Colony in November, 1930, and remained for a year; and he has spent part of each succeeding year as a consultant to the Local Boards of Health. His first work was with the Kingston and St. Andrew Corporation, making a survey of the three filter plants and their distribution system. This resulted in important changes being made in the lay-out of the plants and their distribution mains; improvements were made which led to more effective chlorination of the water after filtration; meters for the accurate measurement of the filtered water were correctly installed; and there was organized a Water Department in charge of experienced engineers. As a result of these changes, daily bacteriological examinations of water samples show that the water supplied to the city during the past two years has been safe for drinking purposes.

In addition to work with the Kingston and St. Andrew Corporation, upon the invitation of the Parochial Boards Mr. Magoon advised their local Superintendents in regard to making improvements in the water supplies of Oracabessa in St. Mary; Spanish Town, Linstead and Old Harbour in St. Catherine; Montego Bay in St. James; Black River in St. Elizabeth; and May Pen in Clarendon.

During 1934 a new Water and Sewerage Board was created to control the provision of safe water supplies and adequate sewage disposal in the Kingston and St. Andrew Corporation. This Board invited Mr. Magoon to co-operate with their field staff. He gave assistance in carrying out work already undertaken and helped with (1) Studies for the control of odours; (2) Studies of ground water in Kingston; (3) Operation of the ammonia-chlorine process of water sterilization; and (4) With experiments to ascertain proper coagulant and dose for the occasional preliminary classification of the Constant Spring Water.

Outside of Kingston, advice and assistance was given in regard to the water supply of Port Antonio, especially in connection with the rapid closed sand filters recently installed. At Black River and St. Ann's Bay, improvements of water supplies by inexpensive extensions of the intakes to wells from which the water issues was advised. The inspections made for the new water supplies of Oracabessa and Highgate in St. Mary led to reports with recommendations that wells be provided for additional water supplies; these are being constructed at present.

The parish of St. James has an important problem of mosquito breeding to control in the tidal marshes north-west of Montego Bay. A study of the problem was made with the Parochial Superintendent and a plan proposed for tidal drainage of extensive areas.

In the outskirts of west Kingston, there are along the coast many areas breeding *A. albimanus* mosquitoes on Government-owned land. An extension of the city in this direction makes the problem more serious; during the fall rains of 1933 and the spring rains of 1934 many people living in this district contracted malaria. A study of the problem resulted in the inauguration of drainage measures. These are being carried out by a co-operative arrangement between the Public Works Department, the Prisons Department and the Corporation. A portable stable mosquito trap was devised by which surveys have been made to show that anopheles control of the tidal swamps is being secured by: (1) Ditches constructed parallel to the shore line to intercept seepage water; (2) Tidal ditches; and (3) Iron pipe outlets through the sandbar.

The following articles have been published—

"Anopheles Control of Tidal Marshes," by E. H. Magoon; *Jamaica Public Health*, June, 1934.
"The use of a Stable Trap to Locate the Breeding Place of Mosquitoes," by E. H. Magoon; *Jamaica Public Health*, October, 1934.

VII.—TRAINING HEALTH WORKERS.

The Jamaica Government is aided by the Rockefeller Foundation in the training of Medical Officers and technicians in public health work. Fellowships which provide study and practical field experience are assigned to the Island Medical Department and the Superintending Medical Officer selects the officers who are to have special training. Since 1927, training under this plan has been given to thirteen health workers. During 1934 these were all engaged in public health work in the Colony, holding the following positions: Senior Sanitary Medical Officer, Government Bacteriologist, Medical Officer in Charge of Kingston Tuberculosis Dispensary, Medical Officer of Malaria Commission, six Medical Officers of Health of parishes, two technicians on staff of Kingston Water Board, and technician of Malaria Commission. Dr. A. A. Peat, Medical Officer of a treatment unit of the Yaws Commission, left in September for fellowship study at the Harvard University School of Public Health.

VIII.—CONCLUSION.

This Report is an attempt to review the growth of public health work in Jamaica as it has developed from the demonstration campaigns conducted by the Government with the co-operation of the Rockefeller Foundation. It is the story of how the principles of preventive medicine have been carried to the people and of how the people have come to recognize the importance of applying these principles in their homes. The result has been improved health, improved living conditions, and a marked decrease in the death-rate. The provision of better homes with increased pride in home ownership on the part of the people, especially the small settlers, has attended the campaigns of sanitation and treatment of special diseases; this cannot be regarded otherwise than with great satisfaction. And the same is true as regards the provision of safe water supplies and systems of safe sewage disposal by towns.

An evidence of the successful growth of public health work in Jamaica is the fact that the expenditures of the Central and Local Boards of Health have increased from year to year, as is shown in the following table:

Year.	Amount.
1919-20	£37,450
1920-21	51,538
1921-22	45,140
1922-23	45,121
1923-24	56,653
1924-25	60,597
1925-26	69,107
1926-27	75,697
1927-28	83,941
1928-29	92,501
1929-30	105,085
1930-31	105,944
1931-32	107,145
1932-33	109,708

The estimated population of the Island for 1933 was 1,090,209, the death-rate for the year being 19.3 per 1,000 population; during 1932 the death-rate was 17.8 per thousand, the lowest death-rate on record; while in 1931 the death-rate was 18.6 for each 1,000. In considering these rates it is interesting to note that in 1921 the death-rate was 28 3 per thousand. In other words, about 10 persons less per each 1,000 population died in 1931-33 as died in 1921.

The review of public health work in Jamaica, as given in this report, shows that the people have co-operated, otherwise permanent Health Departments supported by local taxation could not have been established. Such desirable results are due to the support given by parochial leaders, especially estate owners and managers and the small settlers who followed their example and provided sanitation and home improvements; also medical men, members of Parochial Boards, teachers and ministers. And there has always been the fullest support from the Central Board of Health and the Government Medical Department as well as from other Government Departments. Due to this intelligent support propaganda for public health has spread to all parts of the island until at present sanitation and disease prevention are recognized as important items of public concern and provision for their maintenance forms an important part of the budgets of every parish as well as of the Central Government.

Special mention should be made of the help given to the Hookworm Commission in its early work by the Jamaica Imperial Association which, through a special Committee, called to the attention of the planters the importance of controlling the soil pollution diseases. Another invaluable aid has been the publicity given the health work by the Press of the Colony. The newspapers have published the reports of the co-operative work and accounts of lectures and public meetings as well as given editorial support. The Editor of *The Gleaner*, H. G. deLisser, Esq., C.M.G., has taken an active interest in the co-operative health work since its inauguration; he has always been ready to give advice and assistance and his editorials have been influential in bringing about the success which has been achieved. And without the interest of the Superintendent of the Government Printing Office and his staff, the Bureau of Health Education could not have issued its publications, especially *Jamaica Public Health*, in the successful manner in which this has been accomplished.

The account of the development of public health in the island shows that Jamaica is making progress in the work of controlling disease. The Colony has learned that public health is purchasable and that full realization of the benefits to be derived from health conservation can be found only in providing and maintaining well equipped Health Departments. In this respect, Jamaica now ranks high among the colonies of the British Empire and above most tropical countries. Improved conditions of health mean improved conditions under which the people live and work; these things have made the Island a better place in which to live.

B. E. Washburn,
Director of the Rockefeller Foundation in Jamaica.

IX.—*Report of Unit No.* 1 *of the Jamaica Hookworm Commision for the year* 1934.

Section 1.—The Year in Brief.

The Office and Staff of the Commission were removed to the Cambridge Area in the first week of January although pioneer work was in progress for the last three months of 1933.

All work was terminated in the John's Hall-Maroon Town Area during the month of January.

The Cambridge Area of approximately 80 square miles, lying south and west of the John's Hall-Maroon Town Area is long and narrow. It is mountainous in parts and not evenly populated. The Government Railway from Kingston to Montego Bay runs through its entire length.

There are thirty districts, and of these 23 have been closed. Two districts are now under treatment, two recently censused and the remaining three will be taken shortly.

The following table shows the work accomplished by the Unit in both areas during the year.

Area.	Census.	First Exams.	Infected.	First Treats.	Total Treats.	Re-Exams.	Cured.
John's Hall-Maroon Town	3	3	3	18	113	149	92
Cambridge	11,273	11,263	8,745	7,561	21,189	11,023	7,122
Totals	11,276	11,266	8,748	7,579	21,302	11,172	7,214

In addition to this, 945 private patients were examined and a total of 59 private treatments given to 17 patients. 587 private re-examinations were carried out. These figures include both areas.

Hookworm infection in the Cambridge Area averaged 77.6%, Ascaris 27.8% and Trichocephalus 48.8%. The average worm burden (hookworms) per person was found to be 75.

Post-campaign work was begun by the training of the Sanitary Inspector for the John's Hall-Maroon Town Area. He spent a week with the Commission.

The Willis Flotation method was used for worm identification and a modification of the Stoll technique for egg-count.

Treatment was given according to the Intensive Method using chenopodium and thymol aided by jalap, ol. ricini and magnesium sulphate.

SANITATION.

The latrine sanitation of the area is good but begins to fall off towards the north, especially around Montpelier. There was an initial absence of 241 latrines. Despite the heavy rains this year, this figure has gradually decreased. Improvements have also been made to insanitary ones. Latrines are of the pit type.

The water supply for the area is abundant but unsafe. Numerous springs, rivulets and ponds abound, but due to the level character of some parts stagnation and pollution occur. Protection of these sources of water is urgently needed.

Malaria fever is rampant and to a less extent Typhoid and Tuberculosis, Chicken-pox has been cropping up quite frequently in and around the districts near to Cambridge. Yaws has been fairly prevalent, centres for injections have been opened near the large schools.

Housing conditions are fairly good, although overcrowding is unavoidable, due to poverty. Most families are small settlers, with an average of 5 persons to each home.

EDUCATIONAL WORK.

Similar to the John's Hall-Maroon Town Area co-operation has been excellent and failure to treat infected persons has been due either to removal or grave medical reasons.

Extensive educational work by pioneering and afterwards by house-to-house talks and distribution of pamphlets, as well as the co-operation of influential persons, pastors and teachers, have materially aided in the success attained. One day of each week has now been set aside for increased house-to-house education along sanitary lines.

Forty public lectures on Hookworm Disease and Sanitation were given to an estimated audience of 11,087. Five microscopical demonstrations were given to 800 pupils at five schools. Health Week was fittingly observed; 9 lectures were given to 1,875 children and adults. In addition, 24 pioneer lectures were given to 1,142 people in the Cambridge Area.

ST. JOHN'S AREA—WESTMORELAND.

Pioneer work was begun by Nurse Gabay in the St. John's Electoral District and continued for 18 weeks. 2,042 homes were visited and 37 lectures given. The census covered was 10,556. Sanitation showed 1,078 sanitary and 460 insanitary latrines; 261 homes had no latrines.

Unfortunately, work has been suspended there until better co-operation with the Parochial Board can be achieved.

SECTION 2.—THE JOHN'S HALL-MAROON TOWN AREA.

This area was completed in January of this year. A full description has already been given in the Annual Report for 1933. The final figures and latrine classification are as follows:—

	Census.	Examd.	Infected.	Treated.	Cured.	Under Treatment.
Totals	12,010	11,998	9,389	8,547	8,123	64

Latrine Classification.

		First Classification.			Last Classification.		
	No. of Homes.	D.	E.	F.	D.	E.	F.
Totals	2,600	1,776	325	499	1,796	304	500

SECTION 3.—THE CAMBRIDGE AREA.

The Cambridge Area, forming the southern portion of the parish of St. James, is narrow and oblong in shape, but widens towards the extreme southern border. It is the widest area of the parish (80 square miles).

The St. James range, forms the dividing line of the area from the John's Hall-Maroon Town Area. The area is bounded on the north by the John's Hall-Maroon Town and Montego Bay Areas, on the south by Saint Elizabeth, on the east by Saint Elizabeth and the John's Hall-Maroon Town Area, and on the west by Westmoreland and Hanover.

The population although not very dense, is mainly concentrated around Railway stations, leaving the hilly sections thinly inhabited. The occupation of the people is essentially banana cultivation. Roads on the lowlands are good, but in the hilly regions narrow down to tracks enough to facilitate the passage of beasts of burden. The soil is of rich clay, gradually becoming sandy and loamy towards the northern section.

The water supply is abundant from numerous rivers, springs (mostly unprotected) and ponds. The Great River, dividing the parish from Westmoreland, and the several branches of the Seven Rivers cross the area. Ponds are numerous, and from time to time have given considerable annoyance by the breeding of mosquitoes. The climate is cool and damp, and the stretch of country between Cambridge and Mt. Carey, especially at Montpelier, is blanketed in dense fog every night.

The figures for the area to date are as follows:—

	Census.	Examd.	Infected.	Treated.	Cured.	Under Treatment.
Totals ..	11,273	11,263	8,745	7,561	7,122	150

Population and Housing.

The Cambridge Area has a population of approximately 12,000 people—equal to that of the John's Hall-Maroon Town Area. Most of these people are "small settlers" and as elsewhere stated, they are concentrated around the Railway centres.

Housing conditions are comparatively fair, for although overcrowding exists everywhere with approximately 5 persons to each home, these buildings are of solid lumber.

Sanitation and Communicable Diseases.

On the whole the sanitation (latrine) of the "small settlers" has been satisfactory. It is only where "squatters" and other labourers work near the large properties that difficulty in latrine construction and maintenance is observed. Garlands and Montpelier offer such difficulties. Co-operation with the other branches of the Public Health Department has, however, resulted in the rapid improvements to sanitation, thus enabling the Commission to continue an uninterrupted course.

In the 23 districts already completed by us, 54 insanitary latrines were made sanitary and a total of 20 new latrines were constructed. Work is now being further pushed around Mafoota and Roehampton where sanitary conditions were far below the required standard. Latrines are of the pit type.

The latrine sanitation for 27 districts in the area is as follows:—

		First Classification.			Last Classification.		
	No. of Homes.	D.	E.	F.	D.	E.	F.
Totals ..	2,345	1,557	190	241	1,432	144	192

The communicable diseases of most concern have been Malaria, Yaws, Chicken-pox, Tuberculosis and Typhoid.

Yaws.—Due to the great prevalence of this disease, injections have been in progress at various centres from Catadupa to Anchovy. At present cases receive treatment at Cambridge and Anchovy.

Malaria.—Malaria has been very prominent especially during the latter months of the year around Cambridge and Bickersteth. Mention has been constantly made of stagnant ponds at Cambridge and Bickersteth and on the Montpelier commons and the Sanitary Inspector has been doing his best to ameliorate the conditions. Anopheles have been caught from the pond bordering the Cambridge Railway Station.

Chicken-pox.—Several cases were found at Bruce Hall, most of the children attacked in that district attend the Retrieve School just across the parish border—in Westmoreland. As will be noted very little or no control work is done by Sanitary Inspectors in that section of Westmoreland.

Water Supply.

The sources of water for the area are variable, abundant, but mostly unsafe. In the eastern hilly section of poor peasants, small catchments are the only means available.

Lapland has a private piped supply and Catadupa has a large protected spring.

The central area around Cambridge fares the worst with numerous springs all unprotected and often polluted. It is understood that a Bill is now before the Parochial Board relative to the construction of a good source of clean water for Cambridge.

Branches of the Great and Seven Rivers water the area towards the western lowlands section; these are aided by numerous ponds. For this reason this part of the area is particularly damp and foggy at nights.

The rainfall is abundant. The Public Works Department recorded a total of 103.25 inches (to Dec. 19th) for the year.

Educational Campaign and Co-operation.

It is the wish of the Commission to extend their thanks to all those influential men in the area, especially the pastors and teachers and other members of the Public Health Department, who have so energetically aided us in our work. The co-operation attained has been excellent and it has been found difficult to check the number of persons desiring private treatment from across the Westmoreland border.

Due to the absence of "blind districts," the facilities for through and through transportation and the number of schools and churches, the people turned out, not only for treatment and meetings, but also for advice on all other ailments.

Lantern lectures were successful in all districts treated, and, added to the various forms of education along sanitary lines, by posters, pamphlets and meetings, a special day of each week was set aside for house-to-house talks on Public Health topics and inspection of the methods of cleanliness in the homes.

Forty public lectures on Hookworm Disease and Sanitation were given to an estimated audience of 11,087. There were five microscopical demonstrations given to 800 pupils at five schools. Health Week was fittingly observed and so arranged that the rains, usually beginning here in the afternoons, did not affect their demonstration; 9 lectures were given to 1,875 children and adults. In addition, 24 pioneer lectures were given to 1,142 persons in the Cambridge Area.

SECTION 4.—TREATMENT.

To ensure the efficacy of educational work among the peasantry it has been found expedient, this year to return to the former grouping of districts using the same intensive method. Instead of having a census of 600–700 persons under the care of a Field Officer, a much smaller one of 300–500 has been substituted. The per capita cost per person treated has therefore increased, but much better control, supervision and health teaching has been given.

Pioneer work in this area has been such that everyone was ready to receive treatment. The drugs used were chenopodium, thymol, jalap, magnesium sulphate and ol. ricini. As in our work last year no jalap was added to the capsules containing chenopodium. The results obtained have been as good as anticipated; seeing that persons in this area, especially those occupied in the cultivation of bananas, have a particularly high average worm burden of 75.

The average percentage of hookworm infection was found to be 77.6; that of Ascaris to be 27.8 and Trichocephalus 48.8.

The average percentage of cures now obtained after the first two treatments is 64.9%. Cures after third and fourth treatments carries the percentage to 87.9.

The chief handicap to routine treatment has been the incidence of Malaria fever and Yaws. For Malaria a small amount of quinine has been doled out until cures are effected.

The following tables show the percentage of cures after each examination:—

Examination.		No. Examd.	No. Cured.	Percentage.
2nd Exam.	..	7,186	4,668	64.9
3rd "	..	2,457	1,686	64.5
4th "	..	723	433	59.8
5th "	..	182	95	52.1
6th "	..	16	8	50.0

N.B.—These figures are for the closed districts only.

The following table shows, in continuous figures, the percentage of cures after each examination:—

Treated.	Cured on 2nd Exam	%	Cured on 3rd Exam.	%	Cured on 4th Exam.	%	Cured on 5th Exam.	%	Cured on 6th Exam.	%
7,222 ..	4,688	64.9	6,354	87.9	6,787	93.9	6,882	95.2	6,890	95.4

N.B.—These figures are for the closed districts only.

It has been customary to discontinue treatment after five treatments if the patients still remain infected, but as many as eight treatments have been given in refractory cases. In the closed districts of this area 250 6th, 39 7th, and 3 8th treatments were given.

The following table gives the final figures for the 23 closed districts of the area:—

	Census.	Examd.	Infected.	Treated.	Cured.	Dis-continued.	Under Treatement.
Totals	10,171	10,167	7,925	7,222	6,890	289	43

The residual infection in the area is not above the average and is divided as follows in the closed districts:—Positive not treated 703, discontinued after treatment 289, left under treatment 43, total 1,035 or 13% of the infected.

A total of 651 patients were not treated for medical reasons in the closed districts. The figures follow: Pregnant, 217; with young baby, 39; Heart Disease, 56; Senile Debility, 212; Yaws, 62; Gonorrhoea, 15; Syphilis, 2; Hernia, 5; Tuberculosis, 2; Malaria, 5; Gastritis, 2; Blood Poisoning, 1; Fits, 1; Rheumatism,1; Abscess, 1; Womb troubles, 1; Menstrual disorder, 1; Stricture, 1; Paralysis, 4; Mentally deranged, 2; Bright's Disease, 1; Jaundice 1; Diabetes, 1; Crippled, 1; Bad Liver, 1; Bad Kidneys, 1; Unclassified, 14.

There were no fatalities following treatment.

WORK OF THE NURSES.

There has been no change in the staff for the year. Nurse N. S. Gabay did pioneer work in the St. John's Electoral District, Westmoreland, for 17 weeks, and Nurse C. V. Ramsay did the same for one week, making a total of 18 weeks spent there.

In August Nurse Gabay was sent to act for four weeks as Sanitary Inspector of the John's Hall-Maroon Town Area. Mr. Carty, the Sanitary Inspector for that area, received one week's training from us here and spent the remaining three weeks on sick leave.

One day of each week has been set aside for the Nurses to do better individual instruction to the people by house-to-house visits. Added to this the Nurses continue to census and send out all Yaws cases and are present at any injection centre near their assigned district.

PRIVATE TREATMENTS.

Due to extensive pioneer and educational work the people on the Westmoreland border have long been expecting treatment and in many cases have temporarily changed their habitat to St. James so as to get the benefits of treatment. Other than these there have not been many cases for private treatment. A total of 59 private treatments were given to 17 patients during the year.

It may be noted, in passing, that those treated from across the border (chiefly around Amity) showed characteristic symptoms with very low haemoglobin count and very heavy hookworm burden. One case showed over 900 worms by egg-count and another 530.

INCIDENCE OF HOOKWORM INFESTATION.

Due undoubtedly to the heavy rainfall, clayey soil, extensive banana cultivation and former poor sanitary conditions, the hookworm infection of the area has been very high especially around Cold Spring and Sweet Water.

Hookworm infection varies from 60.6% in District No. 15, Cambridge C to 87.3% in Districts Nos. 3 and 4, Cold Spring and Sweet Water with an average of 77.6% in the area to date.

The Willis Flotation method was used for worm identification and a modification of the Stoll technique for egg-count.

The following tables show the percentage of infection relative to a. Age Groups, b. Sex, in the Cambridge Area.

Age Groups.	Examd.	Infected.	Percentage.
0 - 5 yrs.	1,602	686	42.8
6 - 10 "	1,776	1,446	81.4
11 - 20 "	2,386	2,102	88.0
21 - 30 "	2,306	1,995	86.5
31 - 40 "	1,325	1,044	78.7
41 - 50 "	906	724	79.9
51 - 60 "	540	416	77.0
Over 60 years	422	332	78.6
Totals	11,263	8,745	77.6

Sex.	Examined.	Infected.	Percentage.
Males	5,499	4,473	81.3
Female	5,764	4,272	74.0
Totals	11,263	8,745	77.6

STATISTICS OF JOHN'S HALL-MAROON TOWN AREA.

1. Census		12,010
a. No. removing before examination	5	
b. No. dying before examination	2	
c. No. refusing examination	5	
2. No available for examination		11,998 or 99.9%
3. Number examined		11,998 or 100%
4. Number found infected		9,389 or 78.2%
a. No. not treated for medical reasons	747	
b. No. removing before receiving treatment	73	
c. No. dying before receiving treatment	3	
d. No. not located for treatment	6	
e. No. refusing to take treatment	13	
5. Number available for treatment		8,547 or 91.0%
6. Number treated		8,547 or 100%
a. No. discontinued for medical reasons	80	
b. No. removing before being cured	86	
c. No. refusing further treatment	3	
d. No. dying before being cured	1	
e. No. discontinuing after 5 or more treatments	190	
7. Number possible to cure		8,187 or 95.7%
8. Number cured		8,123 or 99.2%

STATISTICS OF CAMBRIDGE AREA.
(23 closed districts.)

1. Census		10,171
a. No. removing before examination	3	
b. No. refusing examination	1	
2. Number available for examination		10,167 or 99.9%
3. Number examined		10,167 or 100%
4. Number found infected		7,925 or 77.9%
a. No. not treated for medical reasons	651	
b. No. removing before receiving treatment	50	
c. No. refusing to take treatment	1	
5. Number available for treatment		7,223 or 91.1%
6. Number treated		7,222 or 99.9%
a. No. discontinued for medical reasons	45	
b. No. removing before being cured	49	
c. No. dying before being cured	1	
d. No. discontinuing after 5 or more treatments	194	
7. Number possible to cure		6,933 or 95.9%
8. Number cured		6,890 or 99.3%

STATISTICS OF CAMBRIDGE AREA.

(Districts in progress.)

1. Census		1,102
2. Number available for examination		1,102 or 100%
3. Number examined		1,096 or 99.4%
4. Number found infected		820 or 74.8%
a. No. not treated for medical reasons	35	
b. No. removing before receiving treatment ..	1	
c. No. dying before receiving treatment ..	1	
5. Number available for treatment		783 or 95.4%
6. Number treated		339 or 43.2%
a. No. discontinued for medical reasons ..	2	
b. No. removing before being cured ..	6	
7. Number possible to cure		331 or 97.6%
8. Number cured		232 or 70.0%

SECTION 5.—WESTMORELAND.

Following our removal to the Cambridge Area in January, pioneer work was begun in March in the St. John's Electoral District of Westmoreland. Nurse Gabay spent 17 weeks there and Nurse Ramsay 1 week; in all 18 weeks.

The Medical Director visited this section from time to time and later visited and spoke at a meeting of their Parochial Board on the advisability of maintaining sanitation in preparation for hookworm treatment work. Due to lack of Parochial funds, however, this measure was discontinued, but, the Board pledged their support for the ensuing year.

The work done during the time spent by the Nurses is as follows:—

Census covered	19,556
Homes visited	2,042
Sanitary latrines found	1,078
Insanitary latrines found	460
Homes found without latrine	261
Group lectures given	37

SECTION 6.—PRESENT PERSONNEL.

Dr. T. B. Sinclair ..	Medical Director
Mr. A. Lindo ..	Chief Clerk
Mr. O. A. Harris ..	Asst. Clerk
Mr. R. C. Gray ..	Clerk and Typist
Mr. R. S. Heslop ..	Chief Microscopist
Mr. O. L. Levy ..	Asst. Microscopist
Mr. F. J. Fletcher ..	Field Officer
Mr. G. V. Ramsay ..	do.
Mr. G. E. Richards ..	do.
Mr. T. W. Patterson ..	do.
Mr. C. N. Gentles ..	do.
Mr. N. S. Gabay ..	do.
Mr. H. M. Gray ..	do.
Mr. R. J. Hyman ..	do.

T. B. SINCLAIR,
Medical Director.

Report of Unit No. 2 of the Jamaica Commission for the year ending 31st December, 1934.

ADMINISTRATION.

Medical Director ..	Dr. H. D. Chambers—October 1, 1933–Jan. 29, 1934
Medical Supervisor ..	M.O.H., Trelawny—January 30, 1934–Oct. 31, 1934
Medical Supervisor ..	M.O.H., St. Catherine—November 1, 1934–Dec. 31, 1934
Chief Clerk ..	F. G. Somers
Assistant Clerk ..	E. S. Edwards
Typist	R. J. Moody
Chief Microscopist ..	O. L. Atterbury
Asst. Microscopist ..	S. G. Allen
Field Staff ..	P. M. East, C. J. Hales, R. S. Oliver, S. A. Dougherty, V. A. McKenzie, P. A. Hyde, H. W. Jones, A. N. Hamilton.
Caretaker ..	Irene Johnson

RESUME OF WORK IN THE PARISH OF TRELAWNY.

The parish of Trelawny has an area of 332 square miles, divided conveniently into 3 main divisions, which serve as Medical Districts, as follows:

A. Upper Trelawny (hereinafter called the Albert Town-Ulster Spring Area) of 109 square miles of well developed country extending from Troy to Lorrimers in the south to Ulster Spring, its northern limit, triangular in shape and rich in agriculture.

B. Eastern portion of Lower Trelawny—70 square miles in area—stretching from Ulster Spring to the sea coast at Rio Bueno, embracing the eastern districts and being bounded on the west by a perpendicular line through the parish passing through the Duanvale District. Here the industry is mixed, in addition to bananas there being sugar cane, cattle rearing and dairy farming. The chief towns are Duncans, Stewart Town and Clark's Town.

C. Western portion of Lower Trelawny—253 square miles in extent embracing the final third of the parish, with its southern base formed by the Cockpit Country. Western Trelawny is a great cane producing centre.

In 1 year 10 months the Unit had covered the workable area of 270 square miles—the remaining 62 square niles being Cockpit Country, a rocky, undeveloped and partially uninhabitable portion of Western Trelawny.

The parish was divided into 47 campaign districts, and a census of 32,311 was taken. The average rate of incidence of infection was 67.3%, varying from 83% in the Albert Town-Ulster Spring area to 56% in the western or Falmouth Division. Most of the population was found to harbour the other two most common intestinal worm parasites—Ascaris and Trichuris Trichiura. Of the infected population, and available for treatment, 99.9% received treatment with a 'cure efficiency' of 96.7%. Not included in this total population were 1,138 persons who were examined as private patients.

A detailed statistical analysis of the work done in the parish is given in Section III of this Report.

Co-operation.

In the parish there has been a good deal of team work in health activities. The ease of approach experienced by the Unit was effected through the preparatory work on the part of the Parish Health Unit. As a result of this, the staff was enabled to do very thorough treatment and educational work. A total of 122 lectures—school, public and special—were conducted to a population (approximately) of over 28,000.

The Unit was afforded the opportunity of giving definite assistance to the Parlsh Health Unit in the work for the control of Yaws and Malaria. Field Officers were responsible for the census and the bringing out of yaws cases to clinics, which provided added interest to the work and valuable experience to the staff.

Sanitation.

The standard of sanitation in the parish was satisfactory. Important progress in the method of recording the status of latrines was made by the Unit. It has been customary for the Unit to provide for the Health Department a list of names of districts and householders showing where there was unsatisfactory sanitary conditions. In 1933, the Unit improved upon this by submitting a complete list of names of districts and all householders, and the condition of the latrines found on premises at the time of the last inspection—such inspection would take place on the eve of retiring from the district.

By this method a reasonably accurate record of sanitation of the parish at the completion of the work of the Treatment Unit has been provided, and this will act as a guide to the Sanitary Department in its follow-up work.

The Year in Brief.

In 1934 the Unit continued its anti-hookworm fight in the eastern part of Lower Trelawny; thence to the western portion of the parish, thus completing operations in Trelawny after nearly 2 years of activities. The head offices during this period were at Duncans and Falmouth.

In addition to the above, pioneer and latrine construction work was started in the Riversdale section of East St. Thomas-ye-Vale in the parish of St. Catherine.

In the Duncans Area, the first 8 districts of which had been closed by December, 1933, work was continued in the remaining 5 districts and was brought successfully to a close on March 14, 1934. This area, with its population of 10,489, had an incidence rate of 59.6%.

Intensive operations in the Falmouth Area began on March 15, 1934, and were concluded on October 31. There was a population of 9,817, with an average rate of infection of 56.1%.

In the combined areas of Duncans and Falmouth, a total of 26,732 treatments were given to 10,665 patients, and the cures were computed at 10,459. 19,097 microscopical examinations were conducted, including 226 private stools.

Education in Health.

House-to-house talks, microscopic demonstrations, distribution of literature, and lantern lectures conducted by all members of the staff were the means of spreading knowledge on communicable diseases. During the year 36 lectures were given to an estimated attendance totalling 4,900.

Sanitation.

Controlled by the Parochial Board and directed by the Medical Officer of Health, the Sanitary Inspectors maintained a high standard of sanitation in the Duncans and Falmouth Areas. Except in the District of Calabar, where there were difficulties peculiar to that district in that there was the need for the use of a great deal of dynamite before pits could be erected, the average percentage of homes with satisfactory latrine accommodation was over 80%. Special reference will be made to the progress of construction work in Calabar which enabled the Unit to dispatch a Field Officer to that district to carry out treatment work 6 months after the Unit had retired from that area.

During the treatment activities, the Unit succeeded in getting 130 new latrines and 41 old made sanitary in the Duncans Area; and in the Falmouth Division, 65 new and 75 old made sanitary.

PERSONNEL.

Dr. H. D. Chambers, who had been directing the Unit since October 1, 1933, was transferred to the Jamaica Yaws Commission on January 29, 1934, and Dr. W. J. Branday assumed the duties of supervision on February 1, 1934. This arrangement effected a closer intimacy with the Parish Health Department, and the Unit endeavoured not only to maintain the standard of efficiency it had attained, but to give assistance in whatever phase of the co-operative health programme as opportunity was presented.

Field Officers became responsible for collecting data on Yaws incidence in the districts in which they were conducting their treatment work, and gave valuable help in bringing out to clinics infected cases. In the districts of Deeside and Sherwood, 2,418 treatments were given to 428 cases at such clinics.

Again, in September, there was an outbreak of Malaria in the districts of Haddington and Kinloss. Field Officer S. A. Dougherty was seconded for duty to assist the Health Department in the relief of the sick. To quote from the report of the Medical Officer of Health for the month of October:—

"Field Officer Dougherty was stationed in Kinloss to visit all cases at frequent intervals and instruct them in taking of mixture; by his energetic work the officer contributed largely to the control of the outbreak."

POST CAMPAIGN INVESTIGATION.

A resurvey of the district of Ulster Spring was made in October, 1934 with a view to securing data as to the extent to which Hookworm incidence had been controlled by the treatment Unit and the improvement in latrine sanitation.

SECTION II.—THE CAMPAIGN IN THE DUNCANS AREA.

A full description of the Duncans Area was given in the Annual Report for 1933. At the end of that year the Unit had completed 5 months of activities in the area, closing 8 of the 13 districts into which it was divided for purposes of the work, and having made satisfactory progress in the remaining 5. These 5 districts were:—Kinloss (with the adjoining villages of Haddington, Campbell, Stonehenge and Red Hills), Clark's Town, Rio Bueno and Calabar, Duncans and Old Mountains.

In January, physical examination of positive cases was conducted in 4 of the 5 districts—a course of treatment and re-examination having been already done in the district of Kinloss. In the districts of Rio Bueno and Calabar, treatment was extended only to patients resident in Rio Bueno; sanitation in Calabar being inadequate.

INCIDENCE AND TREATMENT.

The rate of incidence of infection taken from 13 districts with a population of 10,489, of whom 10.461 were examined, averaged 59.6% with maximum and minimum rates of 82.4% and 34.3% respectively.

Of 6,243 found infected, 5,537 received treatment—504 not receiving treatment for medical reasons, 52 removing and 6 dying prior to treatment. 138 cases, representing the infection of Calabar, were deprived treatment owing to lack of sanitation.

14,051 treatments were administered, and 5,421 or 86.8% of the infected population cured.

The latrine classification for the area is as follows:—

Latrine Classification.

	Homes.	D.	E.	F.
Totals ..	2,325	1,910	41	157

Notwithstanding the general depression, the poverty of some of the people, and difficulties peculiar to certain localities, the efforts on the part of the majority of the householders have been creditable, and the tact and impartiality exercised by the Health Department in enforcing the law in exemplary cases had tonic effects.

In any area, it will be found that one sanitary convenience serves, at times, two or more homes. This is especially the case in places where there are estates and tenement houses. There is, therefore, as shown in the foregoing table, a great disparity between the total number of homes and the total number of latrines.

9,746 or 92.9% of the entire population is served with sanitary latrines 187 or 1.8% have unsatisfactory accommodation, and 556 or 5.3% have not made provision. These conditions are being gradually improved by the sanitary inspectors in the follow-up work, and there is evidence that the people are becoming more alive to the necessity of building and using latrines.

OTHER PARASITES.

Among the other parasites found were Ascaris, Trichuris Triciura, Strongyloides and Oxyuris. The incidence of the first two was high, there being 5,556 cases of Ascaris and 6,148 of Trichuris. The Unit tries to interest parents in securing treatment for children found heavily infested with the former.

OTHER DISEASES.

Yaws.—The Unit was directed to co-operate with the Health Department in censusing areas and in bringing out infected cases to clinics. Prevalence of the disease was noted in the districts of Duanvale, Kinloss and Clark's Town.

Malaria.—Sporadic cases occurred throughout the area. The Parish Health Unit conducts control work in the districts of Clark's Town and Kinloss.

THE CAMPAIGN IN THE FALMOUTH AREA.

The Falmouth Area is the western portion of the parish. It is the largest of the three sections into which the parish is divided, but of the 153 square miles of area 62 square miles represent the undeveloped and alsost uninhabitable Cockpit Country. It is bounded on the north by the sea; on the south by the Cockpit Country; on the east by a perpendicular line drawn through the parish from Mountain Spring on the coast to the Belmont Mts.; on the west by the parish of St. James.

In contrast to Upper Trelawny where peasant holdings are numerous, 80% of the population of Western Trelawny depend for a living on the fluctuations of the sugar cane industry.

In the districts of Bunkers Hill, the small settlers make their own pay-day; and in Friendship, formerly a property, where lots from 1 - 10 acres have been sold to the people by the Lower Trelawny Loan Bank, a more independent peasant class is springing up and better houses are being erected.

TREATMENT CAMPAIGN.

Pioneering (educational) work was begun in this area on December 1, 1933, by one Field Officer, and the number of pioneers was increased as the Duncans Area was progressively being completed. Actual census was started on March 15, when the main office was transferred from Duncans.

The area was divided into 18 districts with an average population of 550, and the Unit completed all operations by October 31.

Of a population of 9,817, there were found infected 5,483 or 56.1%. 5,128 or 99.8% of those available were treated, and 5,038 or 91.8% of the infected cured.

INCIDENCE OF INFECTION.

The incidence varied in accordance with the conditions that control the spread of Hookworm Disease—rainfall, soil, habits, etc. It ranged from 82% in the district of Bunkers Hill, with a heavy rainfall and much peasant industry, maintaining an average of over 70% in similar districts, to an average of 38% in Martha Brae and Salt Marsh, areas approaching the town. In Falmouth the infection was only 15%

As was found in other areas, a high percentage of the inhabitants harboured Ascaris and Trichuris Trichiura.

SANITATION.

Latrine sanitation was in a progressive state in this area at the start of the campaign and the Unit did its share in effecting improvements.

The status of latrines at the completion of the Unit's activities, is showed as follows:—

Latrine Classification.

	No. of Hones.	D.	E.	F.
Totals ..	2,231	1,726	57	182

CALABAR.

Reference has already been made to the sanitary conditions that obtained in the District of Calabar during the stay of the Hookworm Unit in the Duncans Area. Six month after the Unit has completed work in this division, a resurvey of the district was made, and it was very pleasing to note that the sanitation had made excellent progress. 94% of the homes had erected satisfactory latrines, and a Field Officer was detailed to administer treatment to the infected cases. Co-operation was of a high order, and within a month the majority of cases had received treatment and were cured.

OTHER FIELD ACTIVITIES.

Malaria.—The problem of Malaria is a big one, though not general. The chief foci lie in the town of Falmouth, and in the collections of pools or ponds in the Clark's Town, Hampden, and Duanvale Districts. Control measures adopted by the Malaria Officer—dusting with Paris Green, spraying with oil, and canalising—have been responsible for the reduction of the annual incidence.

Yaws—Centres of yaws infections were the districts of Deeside, Sherwood and Bunkers Hill. The Unit was responsible for the census of cases in Deeside and Sherwood and succeeded in bringing out to treatment clinics over 400 cases for an average of 6 treatments.

THE CAMPAIGN IN THE RIVERSDALE AREA.

Treatment campaigns had previously been conducted in the parish of St. Catherine in the years 1921-23, and again in 1927. Owing to the indifferent manner in which latrine construction and maintenance was conducted, the Hookworm Commission was unable to tackle the problem of treatment throughout the parish, and so large areas were left unsanitated and untreated.

On November 1, the Unit transferred from Trelawny to St. Catherine and established its office at Riversdale. The programme of work in this parish will include the Lluidas Vale Area.

The Riversdale Area is approximately 43 square miles in extent. The country is very fertile and with an abundant rainfall there can be seen peasant industry (cultivated plots) on all sides, with the houses of its 13,000 population concentrated in the valleys or more widely distributed in the hills. The soil is of a clayey loam and the chief items of produce include bananas, coffee, cocoa, sugar canes and citrus.

SANITATION.

No actual census and treatment can be begun before 1935 because of the need for improvement in the sanitary condition of the area. Field Officers were therefore assigned to various districts to pioneer and assist the Sanitary Department of the parish in construction and repair of latrines.

Up to the end of the year, 2,689 homes with a population of 11,900 had been visited. 38% of the dwellings had sanitary conveniences.

Frequent inspections revealed the following defects in the sanitary structures:—1. The site—insufficient attention directed to the selection of a suitable location of the latrine. 2. The pit—dug on sloping ground, without levelling the top; in some cases these are dug too shallow; in others, too wide for the superstructure. 3. The sills—placed too near the edge of the pit. 4. The boxing—poor material used. 5. The roofing—cocoanut boughs, banana leaves—insufficient protection to the boxing. 6. Trenches—a complete absence of provision for leading off rain water.

These defects seem to suggest that the districts lacked the benefits of the advice and supervision of the sanitary inspector during the period of construction work. This opinion is strengthened when it is shown that the sanitary area, assigned to one sanitary inspector, known as East St. Thomas-ye-Vale, which include the Riversdale Division, is 47 square miles in extent, comprises 87 districts with an approximate population of 18,700 accommodated in 3,700 homes. It is not practical to expect a single sanitary officer to efficiently and expediently supervise and conduct methodical follow-up in an area of this size.

STATISTICS OF FALMOUTH AREA.

Districts 1 – 18, 1934.

1. Census		9,817
a. No. of people refusing examination	28	
b. No. of people removing before examination	12	
c. No. of people not located	3	
d. No. of people dying before examination	1	
2. Corrected Census		9,773 or 99.5%
3. Number of people examined		9,773 or 100%
4. Number of people found infected		5,483 or 56.10%
a. No. of people not treated for medical reasons	291	
b. No. of people removing before treatment	52	
c. No. of people dying before receiving treatment	3	
d. No. of people refusing treatment	1	
5. Number of people available for treatment		5,136 or 93.67%
6. Number of people treated		5,128 or 99.84%
No. receiving 1 treatment	5,128	
No. receiving 2 treatments	5,110	
No. receiving 3 treatments	1,136	
No. receiving 4 treatments	1,120	
No. receiving 5 treatments	186	
No. receiving 6 treatments	29	
No. receiving 7 treatments	6	
No. receiving 8 treatments	2	
a. No. discontinuing for medical reasons	15	
b. No. removing before being cured	18	
c. No. refusing to take further treatment	1	
d. No. discontinuing after 5 treatments	14	
7. Number of people possible to cure		5,080 or 99.00%
8. Number of people cured		5,038 or 99.17%* 91.88

STATISTICS OF DUNCANS AREA.

Districts 1 – 13, 1933-34.

1. Census		10,489
a. No. of people removing before examination	4	
b. No. of people refusing examination	14	
c. No. of people dying before examination	2	
2. Corrected Census		10,469 or 98.8%
3. Number of people examined		10,461 or 99.9%
4. Number of people found infected		6,243 or 59.6%*
a. No. of people not treated for medical reasons	504	
b. No. of people removing before receiving treatment	52	
c. No. of people dying before receiving treatment	6	
5. Number of people available for treatment		5,681 or 91.0%*
6. Number of people treated		5,537 or 97.4%
No. receiving 1 treatment	5,537	
No. receiving 2 treatments	5,518	
No. receiving 3 treatments	1,336	
No. receiving 4 treatments	1,322	
No. receiving 5 treatments	257	
No. receiving 6 treatments	41	
No. receiving 7 treatments	4	
a. No. discontinuing treatments for medical reasons	27	
b. No. removing before being cured	22	
c. No. dying before being cured	1	
d. No. discontinued after 5 treatments	34	
7. Number of people possible to cure		5,453 or 98.4%
8. Number of people cured		5,421 or 99.4% *86.8%

PERCENTAGES CURED AFTER RE-EXAMINATION.

Re-examination.		Maximum.	Minimum.	Average.
1st	..	88.3%	67.7%	75.3%
2nd	..	90.0%	71.7%	71.7%
3rd	..	86.6%	60.0%	74.7%
4th	..	100.0%	33.3%	65.8%

* Includes 138 cases at Calabar.

STATISTICS OF THE PARISH OF TRELAWNY.

The Albert Town-Ulster Spring Area: Jan. 3, 1933 – July 31, 1933
The Duncans Area: Aug. 2, 1933 – March 15, 1934.
The Falmouth Area: March 15, 1934 – Oct. 31, 1934.

1. Census		32,311
a. No. of people removing before examination	24	
b. No. of people refusing examination	42	
c. No. of people dying before examination	4	
d. No. of people not located for examination	3	
2. Corrected Census		32,238
3. Number of people examined ..		32,230
4. Number of people found infected		21,721 or 67.39%
a. No. of people not treated for medical reasons	1,502	
b. No. of people removing before treatment	193	
c. No. of people refusing to take treatment	2	
d. No. of people dying before receiving treatment	12	
5. Number of people available for treatment ..		20,012 or 92.13%
6. Number of people treated		20,003 or 99.99%
No. of people receiving 1 treatment	20,003	
No. of people receiving 2 treatments	19,920	
No. of people receiving 3 treatments	6,067	
No. of people receiving 4 treatments	6,009	
No. of people receiving 5 treatments	1,492	
No. of people receiving 6 treatments	302	
No. of people receiving 7 treatments	223	54,016
a. No. of people discontinuing for medical reasons	81	
b. No. of people removing before being cured	91	
c. No. of people refusing further treatment	4	
d. No. of people dying before being cured	3	
e. No. of people discontinuing after 5 treatments	230	
7. Number of people possible to cure		19,482
8. Number of people cured		19,345 or 99.29%
9. Percentage of infected population cured		89.0%
10. Private patients examined (not included in above figures)		1,138

G. S. ESCOFFERY,
Acting Medical Director.

X.—*Report of the Malaria Commission for* 1934.

MALARIA INCIDENCE, 1934.

Malaria occurred over a more extensive area in this year than in any previous one since our studies began in 1928.

Areas of high fever incidence which occurred in the autumn of 1933 were carried over to 1934. Notably among them were those in St. Elizabeth, Westmoreland, Manchester, St. Catherine, St. Andrew and Kingston.

Outbreaks in epidemic form were few, and were mainly inland. The percentage of the Island's population affected was small.

The most prominent were:—

1. *St. Catherine:*—(a) Bog Walk and surrounding settlements. Relapsing cases are frequent, and are still relapsing at the time of writing.

(b) Lluidas Vale at high altitude and of short duration.

2. *Manchester:*—(a) Porus showing high incidence, mortality and prolonged duration.

(b) A three weeks incidence in the vicinity of a lake near Mile Gully, which was at the time receding, but supported dense larval breeding.

3. *Trelawny.*—(a) Clark's Town which was easily brought under control, property owners seconding the efforts of the Medical Officer of Health and his staff.

(b) Kinloss and Haddington—A few miles south-west of Clark's Town and at a higher altitude. Lacking any immunity and being indigent all were affected. They reacted slowly to medication. There were repeated relapses and a high mortality. The attention they received left much to be desired.

(c) Rio Bueno—Of short duration. Prompt action was taken.

4. *Portland:*—(a) Manchioneal with fair immunity responded to treatment and larval control readily.

5. *St. Mary* —(a) Islington to Rosend and Water Valley. (b) Hampstead. Control measures and quinine administration were prompt. Cases from Rosend and Water Valley showed relapses. Pooled water in river courses supported breeding, fish life having been destroyed.

THE RAINFALL.

The Island rainfall was 79.82".

The average Island rainfall for the 60-year period is 73.87".

The increase over the 60-year average is therefore small.

It nevertheless had a marked influence on the wide distribution of malaria by the irregularity of the precipitation. The first quarter of the year which is usually dry showed a fair rainfall, which continued during the first half of the year. Short periods of rain were followed by short periods of sunlight—conditions favourable to anopheline breeding. In addition to this and of first importance temporary water collections as the result of the torrential rains of the autumn of 1933 did not evaporate, or were rendered unsuitable to support larval breeding, on the contrary, the development of algae as food for larvae and vegetation for their protection increased (as the result of increased rainfall of first half-year of 1934).

The heavy precipitation of 1931 and the normal of 1932 were also accessories and tend to explain much of the inland inroad of malaria.

Years of high rainfall affect adversely the malarial condition of the western half of the Island more than that of the eastern half. Owing to the topography of the country, water readily collects in the western half which supports larval breeding while washing out in the eastern half occurs and lessens breeding.

There is one advantage which results from consecutive years of high rainfall—banks of disintegrated limestone rocks and earth from hillsides fall on flat and marshy land and form a fill, or serve as easily available material for filling. One of the best examples is to be seen at Rock Spring near Rock Fort. Certain swamps in open sunlight also benefited by a stimulation of intense vegetable growth obscuring open water and making it difficult for mosquitoes to oviposit. The dead leaves from these tend slowly to fill the swamp. Many examples are scattered all over the country. The shade created by increased mangrove growth is a natural anti-malarial measure.

PROGRESS IN ANTI-MALARIAL WORK IN 1934.

In 1930 rapid progress was made. Annotto Bay, Oracabessa, Montego Bay, Vere, Golden Grove and Black River were surveyed, and in all, except Black River, control was started. Control measures were started at Black River early in 1931, and in 1932 Sav.-la-Mar and Little London were added.

These areas were of high malaria incidence and coastal in situation except Little London a few miles inland and a few feet above sea level. A large population would be protected. It was hoped that Medical Officers of Health would extend this work to villages and settlements in the vicinity of control areas, and educate property owners to do their share. This hope did not materialise.

Progress in 1934 has exceeded that of 1930 and of all other years from 1929. It is only by careful study that this can be appreciated.

The factors entering in this advancement are as follows:—

1. The increasing prevalence of malaria following a period of wet years, and publicity given to it.

2. The success of anti-malarial work in the areas noted above and the natural deduction that "more and more" control work should be undertaken.

3. The Chairman of the Central Board of Health peremptorily ordered that increased control must be undertaken. On the plea that lack of funds prevented this very necessary increase of control work a policy was enunciated as follows:—

(a) The Malaria Commission should function as "the Department of Malaria" the eyes and ears of the Central Board of Health on this disease. Should investigate all areas of high malarial incidence in the Island and make the recommendations for their abatement, and see that such recommendations were carried out by those responsible under the Health Law of 1895.

(b) Local Health Boards through their Medical Officers of Health are ultimately responsible under the Law for all health work in their respective parishes, and the "Malaria Officer" should be considered an arm of each Board to assist in investigating the several problems as they occurred, and further assist in suggesting means of controlling them, to revisit and inform the Central Board of progress made. This policy was very acceptable to us as it afforded an excellent way out of the "cul de sac" into which we had unwittingly fallen. We further appreciated the fact that the data collected in the Island Survey—that fetish of ours—expressing the minimum of malaria in the Island, also the variations experienced since 1931, would be preserved by each Medical Officer of Health parish, by parish, and so serve to them as the excellent guide it has been to us.

4. The demand for extension of control and our lack of funds, led to the exploiting of resources which had previously afforded little success, but sufficient to indicate the lines along which our efforts should now be directed.

(a) The Caymanas Estates, Limited—A highly malarious area by giving help at transportation, followed by labour and an inspector, leaving material and supervision to Central Government—the partial co-operation of the United Fruit Company in Vere—indicated methods of approach to property owners—an important factor in our work in coastal areas.

(b) The success attending control work in the coastal towns of Portland, without a special vote by making control a part of the routine work of each Sanitary Inspector.

(c) Control measures at Oracabessa from its initiation in 1930 was under the direct supervision of the Medical Officer of Health, though the expense of labour and material was paid by us. This experiment is a success and with the preceding one (b) and the succeeding one (d) appeared the basis of furnishing extension of work with a minimum of financial assistance from our vote.

(d) The Senior Sanitary Medical Officer suggested that the Estimates of Parochial Boards, should show an amount, however, small, for anti-malarial work, and that the parish of St. Mary should budget for a sum to take over the Oracabessa Area advising that the Inspector selected should have other duties—a direct application of experiment (b)

The parish of St. Thomas not only contributed £50, but went one better than the others by asking the Central Board of Health to advise them how this small amount should be spent. The Senior Sanitary Medical Officer and writer attended a meeting of the Board and advised that the sum should be spent in Morant Bay and on one project only.

EXTENT AND RESULTS OF WORK OF THE YEAR.

As this Department is now functioning as an Island one, the extent and result of its activities may now be given parish by parish, and recognition of help received noted under the parish in which its use has been most employed, also the distinguishing feature of control work in each parish:—

Kingston and St. Andrew.—Sporadic cases of malaria occurred in lower St. Andrew in 1931. A survey was made and all breeding places noted, nothing was however done to eradicate them. After the rain storm of 1933, malaria appeared in violent form all over the Corporate Area. Cases were at times so severe that a diagnosis of meningitis was made. The Public Hospital Kingston was congested with cases, especially from the Greenwich Farm and Spanish Town Road. Anopheline larvae were found at the Caribbean Air Base by the Senior Sanitary Medical Officer and party including the Medical Officer of Health for Kingston and the writer.

Nothing was done until February, 1934, when as the result of continued complaints from the Kingston Public Hospital, the writer was ordered by the Chairman, Central Board of Health, to investigate and make recommendations as to measures needed, and to associate himself with the Local Health Board to see the recommendations carried out. Larval breeding at the Air Base was intense, and oiling as a temporary measure began. Superficial ditches were irregularly cut to harden the ground, to enable the oilers under the Chief Sanitary Inspector, to approach the swampy areas. Anopheline breeding was further discovered in the swamp lands beyond "Mother White's" gully extending along the foreshore to the Creek Pond south of the Dump. It was also noted that the dumped material formed a high mound, and as much of garbage that could be burnt, was fired to economise space. This appeared to the writer a great waste of garbage which could be used in filling low lying lands on the other side of the outlet of the North Street Gully and to the Caribbean Air Base—a practise, which the Senior Sanitary Medical Officer as Medical Officer of Health, Trelawny, had initiated at Falmouth with such success. Further breeding areas were found beyond the Caribbean Air Base, westwards in private property on lands of the Sewage Farm, and at a later date extending to Hunt's Bay and linking up with the Ferry Swamp and meeting anopheline breeding areas in St. Catherine. It was noted that rain in the hills of St. Andrew were soon followed by an increase of water surface, both in extent and depth, and later that there were many springs in this locality which varied in output of water in proportion to the rainfall in the hills of St. Andrew. The line of demarcation between the high ground and swamp though irregular, was sharply defined.

The problem appeared to the writer as partly an engineering one, requiring extensive ditching, and that temporary measures of oiling and dusting with Paris Green would be difficult, even if a control staff was appointed under our direct supervision. A consultation with Mr. E. H. Magoon, the Sanitary Engineer of the Rockefeller Foundation, who was fortunately in the Island at the time, was obtained. Mr. Magoon agreed with our opinion and suggested that "tidal ditches" was the best method of control, by first ditching from the foreshore, and at right angles to it, north into high ground, these to be connected by the ditches in the high ground parallel with the foreshore which would intercept the seepage of underground water from the hills and direct them in outflow drains to the sea at low tide, while the area would be partly flooded by sea water at high tide the resulting salinity would thus prevent seepage water from the hills supporting mosquito breeding. The Creek Pond was also visited from which the Dump could be seen, and the possible use of garbage for filling visualised. Mr. Magoon did not commit himself by wholly agreeing with this latter project until by an elaborate surveying of the area for tidal canal, low lying areas were discovered with springs issuing from them which would not be affected by tidal canal drainage. The Corporation furnished labour implements and a Sanitary Foreman. The work progressed rapidly and early results both of unwatering the area and lessening mosquito breeding was noted—the lands are owned by Government and the early and promising results aroused great interest among the residents in the vicinity—the members of the Local Health Board—the Surveyor General in whom the lands are vested and the executives of the Public Works Department. The Assistant Director of the Public Works Department, and many members of the Corporation visited the area. The full details are set out in an interesting brochure by Mr. E. H. Magoon and our thanks to him and Dr. Washburn, who also visited the area, are sincerely expressed.

By a happy chance, or rightly by a series of happy chances, the Public Works Department had included in their Vote an Item for sanitary engineering work in the vicinity of the Dump and Greenwich Farm. The economic use of moulds (loaned by us) for making concrete inverts to pave ditches, effected a saving in that Vote and the dream of using garbage as dumping material would materialize by a bridge being placed across the North Street Gully over which garbage will reach the eastern end of the swamp area. A route has been planned to dumping of garbage from the northern end through Bumper Hall and across the Railway. With the concurrence of the Director of Prisons, the swamp at the north of the Dump formed by the weight of the column of the Dump intercepting the seepage in its process to the sea, has now been filled and lands of the Prison Farm encroached on and bonified.

A saving on this Vote of about £300 has been effected. The Director of Public Works was approached to ask the Government to allow this balance to be used for further bonifications and study—prison labour to be made use of. He consented and this request was backed up by a strong recommendation for approval by the Chairman Central Board of Health. In spite of the depressed financial conditions and the needs for economy, the sympathy expressed by the Chief Executive of the Colony towards Health Work and his interest in this branch particularly, little surprise, but great pleasure was experienced when the request was granted.

Here the writer must express his thanks to the Public Works Department for their increasing help and sympathy. Our importunities have always been directed at the Assistant Director of the Public Works, Mr. Neville Roots, whose sympathy with our work, and repeated help and advice, without use of official channel, is greatly appreciated. Superintendents and their assistants have given increased help during the year and more will be required of them as the work expands.

St. Thomas.—Progress in anti-malarial work in this parish has exceeded our most sanguine expectations, and has resulted in reducing fever incidence to a lower limit than any other parish, whereas, at the Island Survey it was the highest.

Mass control of the Port Morant Section of the parish began in June of this year. It is 50 to 60 square miles in extent, and two-thirds of the malaria incidence of the parish is involved.

The personnel consists of a Chief Sanitary Inspector with a car and three labourers as a nucleus paid by the Central Board of Health (Malaria Commission). An Assistant Sanitary Inspector paid by property owners, labourers paid by them and trained by us.

The Jamaica Sugar Estates, Ltd., in addition supplies oil and transportation.

The control work is finer than could have at first been anticipated when the extent of the area is considered.

The Manager of the Sugar Estates, Ltd., has taken a keen interest in the work, and the co-operative side of it was left entirely to him. A full report of this work is due in June, 1935, and will be embodied in the Annual Report of that year. There is every promise of continued success; from the data and experience obtained will be based the ambitious plan of the Island control of malaria. In this connection we must add our thanks to Dr. A. I. Foster, the Acting District Medical Officer of the Plantain Garden River District in St. Thomas, for his interest in our work. During the year he sent up 142 blood smears from 142 patient to whom quinine was to be aaministered. One batch of 42 in the third quarter of the year showed 6 positives for malaria—no parasite of malignant tertian fever was present. 99 smears in the fourth quarter showed 31 positive.

Portland.—Situated in the area of highest rainfall increase of malaria follows period of drought as experienced in the middle part of the year. It supplied the only coastal increase of fever incidence already referred to.

All coastal towns are under partial control except Buff Bay which is under complete control.

An examination of 100 school children showed negative blood and a low spleen rate. At the Island Survey the Parasite Index was 47.5 and the spleen rate 17.1.

Only two visits of inspection were made by the writer during the year. Larval collections and blood smears were regularly sent up for identification and classification.

St. Mary.—A high fever incidence and death rate was the experience of this parish. The incidence was chiefly inland and temporary anti-larval control and treatment with quinine were measures adopted.

The control area of Annotto Bay was affected during the latter half of the year by labourers working on the Wag Water Bridge in the outside zone taking up residence in the area, especially Bottom Bay, during their illness before and after hospitalisation in the Annotto Bay Hospital. Pressure was brought to bear on property owners to extend the zone of control. Those of Gray's Inn and Iterboreale responded. It is expected that others will follow in the ensuing year.

The District Medical Officer, Dr. G. I. Lecesne, seconded all our efforts to extend our control work without the area, kept us accurately informed of the trend of malaria in his district and was responsible for much constructive criticism. This attitude is urgently needed amongst all District Medical Officers practising in malarious districts, and we are grateful for this needed lead giving. It is a part of our programme for 1935 to press for this branch of co-operation with the hope that more accurate data of fever incidence and death rate may result.

USE OF PARIS GREEN.

The amount of Paris Green used during the year is two-thirds less than the past two years. Its place is taken by ditching and cleaning of drains and banks of rivers and use of fish life will be further alluded to.

Annotto Bay.—Annotto Bay and the Caymanas area in St. Catherine use double the amount of Paris Green than all other areas combined. Efforts to improve this "infantile" condition have been unavailing.

Oracabessa.—This area has been handed over to the Parochial Board of St. Mary as previously mentioned.

Visits of inspection were made to Hampstead, Port Maria, Islington, Rosend, Orange Hill, the Wag Water Valley, Broadgate, Devon Pen, Castleton, Epsom and Enfield during the year.

The Medical Officer of Health does control work in Port Maria.

St. Ann.—The Island Survey showed malaria incidence at the eastern and western extremity of the parish. There has been an increased fever incidence since 1931, affecting chiefly the western half of the parish from St. Ann's Bay. Many cases of malaria from the uplands were noted as far as Queen Hythe, while anopheline breeding was noted at Bambor (altitude 2,000 ft. Parasite Index 1929 at 6% positive).

The District Medical Officer at St. Ann's Bay takes a keen interest in all fever incidence in his parish and can always be relied on for accurate clinical data.

No control work is being done in the parish, but an early start is anticipated. The Sanitary Inspector in charge of the Moneague District has been advised to watch for signs of anopheline breeding and to note and report any fever cases in his area.

Visits of inspection were made in the western half of the parish.

Trelawny.—The incidence of malaria in this parish is still greater than in the years prior to 1931. The increased interest in anti-malarial work stimulated by the Medical Officer of Health, gives every promise of steady improvement.

The long drawn out epidemic in the Clark's Town-Kinloss-Haddington Area has already been alluded to.

Falmouth, the capital town, has been under control since 1931. The result of the destruction of mangrove by the sea storm of 1932 in increasing the area of breeding of the malaria conveying mosquito remains. An extensive tidal ditch behind the town has assisted in lessening the breeding.

St. James.—The fever incidence in this parish was less than in 1933. The inland incidence was greater than the coastal, and the Bickersteth-Montpelier-Cambridge Area showed the greatest and most prolonged incidence. Many visits of investigation and inspection with the Medical Officer of Health were carried out in this area. A spleen index of schools in the area was twice made. Night flights of mosquitoes were checked, the military participating on one occasion, as the Montpelier pastures were suited to the annual field exercises. The Medical Officer of Health began control work in the latter half of the year when weather conditions improved.

A map of the Island was prepared for the military, showing the endemic and sporadic areas of malaria, to assist them in their choice.

No fever incidence was reported during or after their stay at Montpelier.

Montego Bay the capital of the parish with its population estimated at 9,000, has been under control since early in 1930. Control was well maintained during the year in spite of the heavy breeding in the extensive swamp denuded of mangrove following the sea storm of 1932.

An increase of staff was found necessary, many stone holes supporting chiefly culicine breeding, were filled and epiphytic vegetation holding water and supporting breeding, were removed, the Medical Officer of Health and his local staff assisting.

An engineering study of the swamps by Mr. E. H. Magoon of the Rockefeller Foundation and Mr. Connolley, the Board's engineer, in which the writer participated, was undertaken during the year.

A special report was prepared in which recommendations for extensive drainage were made. These recommendations have not so far been acted upon.

Filling of Stone Holes.—Extensive filling of holes in limestone rocks has been done in this area, and still continues, also to a less extent at Oracabessa in St. Mary.

Hanover.—The incidence of malaria in this parish has increased since 1931, and was noted over a wider area in 1934. Lethe at the eastern border of the parish and Lucea were most affected in 1931. In 1934 Green Island and Sandy Bay appeared most pronounced. No organized field control obtained. One visit of inspection was made, but it was spoilt by rain. This parish and the parish of St. Catherine now serve as observation areas of the evolution of malaria in nature. This source of information, it is hoped will not long continue.

Westmoreland.—Savanna-la-Mar the capital and fifth in population of the coastal towns, showed a high incidence of malaria during the Island Survey, and with Little London 6 miles to the north-west, has been under control since 1932.

Ponds of varying size form the chief problem of control in these areas. In the former, Sav.-la-Mar, Paris Green is used with success in the month of low rainfall, but is only partially effective at other periods. Cleaning followed by oiling has proved most successful. Filling of swampy areas by garbage is steadily pursued by the Board. It is amusing or pathetic to note that some small settlers in these localities not only encourage growth of vegetation suitable for filling when cut, but will help themselves to garbage without permission.

DRAINAGE AND LAND RECLAMATION.

This is the method of control practised at Little London and is the characteristic feature of control in this parish.

About sixty ponds, varying from a quarter to three acres have been drained, about forty remain partially drained until culverts under the main road have been lowered to secure proper levels. Drains pass through a series of ponds and meet other drains, ultimately meeting one main drain as outlet to the sea. All lands reclaimed are put under sugar cane. There is a steady demand for further drainage.

The plain of Westmoreland with its background of hills as in the Port Morant Area, calls for urgent mass control as the fever has been high since 1931, and the death rate number 88, or higher than any other parish.

St. Elizabeth.—Fever of epidemic quality was noted in 1933—after the heavy precipitation in August. The parish is subjected to prolonged drought, during which fever is at its minimum. The foci of breeding are in ponds, tanks, shallow wells and depressions on the plains. These are sufficiently far from each other to prevent control areas being economically formed. The residents are being educated to clean ponds and to rely on fish life as anti-larval measures, also to fill and oil rain water pools.

Black River, the capital town, has been under control since 1931. The control is selective A. Albimanus alone, the malaria vector which breeds abundantly in nearby swamps, but avoids the extensive swamps north and east of the town.

The Black River is the largest and stateliest river of the Island and is at the eastern end of the town. Hyacinth vegetation with debris around it supported heavy breeding of the malaria-carrying mosquito. Patches of hyacinth are held in situ along the river's banks. Spirogyra in small bayous also support breeding.

Extensive removal of vegetation, destruction of the roots and overhanging branches of mangrove and cleaning the banks of the stream is the feature of control in this area.

Manchester.—The least malarious of the parishes suffered at two points in the foot hills as the result of water collections from pervious limestone rocks, a lake formed at Harmons, and a pond and stream formed at Redberry, Porus. An engineering scheme is approved to permanently take care of the latter.

His Excellency the Governor visited the swamp area thus formed.

Clarendon.—Vere, in this parish was the first mass control area. The extent is 9 miles by 4, and is within the properties of the United Fruit Company. Each year the improvement has increased. Quinine treatment of malaria at the Dispensary of the United Fruit Company of all labourers having fever is the main feature in this area. No other anti-malarial project is undertaken by us in this parish and none by the Parochial Board.

St. Catherine.—The depth of malaria incidence in this parish is about 40 miles. Quinine treatment is the only anti-malarial measure on the farms of the United Fruit Company, ameliorating, but insufficient. The Board treats urgent outbreaks.

Caymanas is the oldest of our control areas. Paris Green is used entirely—The attempt made to "close cycle" the extensive ditching programme of the property to serve as an anti-malarial measure has so far failed.

FILLING WITH GARBAGE—IN ADDITION TO WORK MENTIONED ELSEWHERE.

Garbage from the town of Falmouth has been used since 1931 to fill depressions and burrow pits. About 35 such fills have been carried out and maintained as subsidence occurs. The present Medical Officer of Health adds sand and alluvium from ditches cleaned. Increased culicine breeding is noted where the fill is in progress or is incomplete.

Filling of a similar nature has been carried out at Annotto Bay, Montego Bay, Port Maria and Sav.-la-Mar.

At Black River a large swamp in the vicinity of the town is nearly completely reclaimed. Dumping of pimento destroyed by fire and limestone removed from the main street during reconstruction, was added to the garbage. Trucks of the Public Works Department deposited the limestone around the swamp while labour was supplied by the Malaria Commission and the Parochial Board.

THE USE OF OIL.

Oil as a control measure was first used in Montego Bay. It was supplied by the Parochial Board to be used against the heavy breeding of culicines in the vicinity of the Railway, and has since been extended to other parts of the areas, especially to the swamps at the north of the town. Since that time the Parochial Boards of St. Elizabeth, Westmoreland, Trelawny and St. Mary have supplied oil to be used by us. The property owners in Vere (United Fruit Company) Port Morant (Jamaica Sugar Estates Ltd.), Clark's Town and Long Pond Estate have also supplied oil.

In the last quarter of the year, at the instance of the Chairman, Central Board of Health, we began to use oil paid for from our Vote. The oil selected was gas oil distributed by means of "Four Oaks" Sprays. The method though very efficient, is twice as expensive as Paris Green. It is proposed to use Paris Green during the first half of each year; when transmission is lowest, and oil during the second half, especially during July, August and September.

LOCAL RESPONSIBILITY.

The Medical Officer of Health took over the supervision of work in the control area of Falmouth at our request, while the expense was had from the Anti-malaria Vote—this as a preliminary to taking over as soon as parochial funds will allow. The Medical Officer of Health, St. Elizabeth, took charge of the Control Unit at Black River as soon as he was appointed. Other whole and part-time Medical Officers of Health have been invited to do likewise.

The first outcome of this experiment is interesting and instructive. The control area has not received the minutiæ of supervision expected, but the services of our Sanitary Inspectors have been exploited to investigate and assist in initiating control work in other areas of their parishes, and this fulfils the writer's original conception of the lines along which expansion of anti-malarial work should progress until the final taking over as suggested by the Chairman, Central Board of Health.

This pleasing exhibition of their wit and the progress made, especially in the increasing consciousness of the magnitude of the problem and its economic significance, has assisted in making a year of unusual demands a happy one.

CONCLUSION.

There is urgent need of a careful study of the death rate from malaria in the Island, every effort will be made during the ensuing year to bring about co-operation of District Medical Officers in supplying blood smears from their doubtful fever cases in order that some elucidation of the true death rate from malaria might be obtained. It must be noted that the death rate from parishes where epidemic of inland malaria occurred has been carefully studied—it has been comparatively low—while areas of endemic malaria show a higher death rate than could have been expected.

TABLE 1.—Larvae collected from each Area during 1934.

Areas.	Larval Catches		Variety Caught.			
	Total.	Large.	A. albimanus.	A. grabhami.	A. vestitipennis.	A. crucian.
Caymanas ..	1,927	5,767	1,811	115	1	..
Annotto Bay ..	3,967	497	2,641	761	565	..
Montego Bay ..	1,254	354	950	302	2	..
Vere ..	1,154	247	1,082	65	7	..
Golden Grove ..	1,767	384	1,648	107	12	..
Black River ..	2,894	1,171	2,861	24	9	..
Falmouth ..	1,234	207	959	264	11	..
Sav.-la-Mar ..	1,564	425	1,394	102	57	11
Little London ..	2,120	625	2,036	36	48	..

TABLE 2.—Collection of Adult Mosquitoes from each Area during 1934.

Areas.	Adult Catches.		Variety caught.			
	No. Catches.	No. caught.	A. albimanus.	A. vestitipennis.	A. grabhami.	A. crucian.
Caymanas ..	96	308	284	11	3	10
Annotto Bay ..	92	418	123	267	28	..
Montego Bay ..	177	730	630	9	91	..
Vere ..	98	131	109	4	18	..
Golden Grove ..	94	479	345	101	43	..
Black River ..	93	3,046	642	24	17	2,363
Falmouth ..	150	1,874	1,261	408	205	..
Sav.-la-Mar ..	152	1,123	930	140	8	45
Little London ..	136	1,137	979	122	27	9

TABLE 3.—Results of Weekly Blood Examinations for all Areas during 1934.

Areas.	Weekly Fever Incidence.					
	No. of smears taken.	No. Positive.	Parasite found.			
			P. Vivax.	P. Falciparum	P. malariae.	Mixed.
Caymanas ..	64	14	5	8	1	..
Annotto Bay ..	123	34	11	23	..	..
Montego Bay ..	166	26	10	15	1	..
Vere ..	251	64	22	31	11	..
Golden Grove ..	68	10	7	2	1	..
Black River ..	154	36	20	13	3	..
Falmouth ..	152	47	14	17	15	1
Sav.-la-Mar ..	94	26	8	18	..	..
Little London ..	132	29	15	11	3	..

TABLE 4.—Results of Blood Examination for all Areas at Annual Survey.

Areas.	Annual Resurvey.						
	No. Examined.	No. Positive.	Per Cent. Positive.	Parasite found.			
				P. Vivax.	P. Falciparum.	P. Malariae.	Mixed.
Caymanas ..	54	9	16 6	1	8	..	..
Annotto Bay ..	100	22	22	5	17	..	..
Montego Bay	100	6	6	4	..	2	..
Vere ..	100	11	11	2	9	..	..
Golden Grove	100	46	46	13	32	1	..
Black River ..	50	21	42	8	..	13	..
Falmouth ..	100	4	4	1	3	..	..
Sav.-la-Mar ..	100	11	11	2	8	1	..
Little London	50	2	4	1	..	1	..

TABLE 5.—Results of Examination for Enlarged Spleens at Annual Resurvey, 1934.

Areas.	No. Examined.	No. Enlarged.	Per Cent. Enlarged.	Spleen size encountered.				
				Palpable.	1	2	3	4
Caymanas ..	54	4	..	0	..	..	4	..
Annotto Bay ..	100	9	9	5	3	..	1	..
Montego Bay ..	100	6	6	5	..	1	..	..
Vere ..	100	13	13	11	2	..	..	..
Golden Grove ..	100	28	28	13	11	2	2	..
Black River ..	50	11	22	7	3	1	..	..
Falmouth ..	100	5	5	2	2	1	..	..
Sav.-la-Mar ..	100	18	18	14	4	..	..	..
Little London ..	50	10	20	7	2	1	..	..

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